PULP & PAPER

JANUARY 1960

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A New Look at Water Use
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Alkaline Pulping Men Meet
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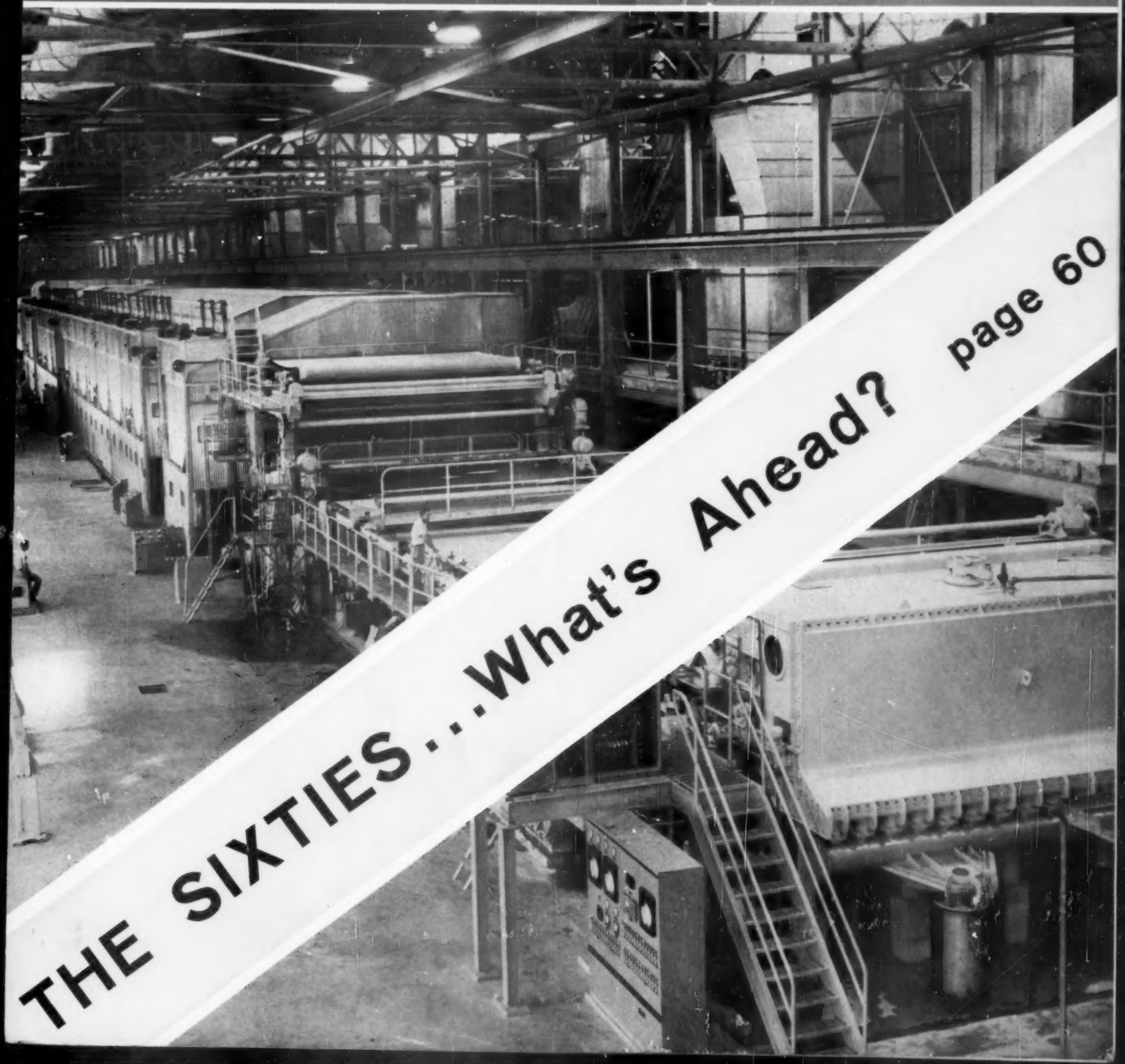

THE SIXTIES . . . What's Ahead? page 60

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2. Your paper should be confined to 1500 words, typed with double spacing on one side only of plain sheets, 8½"x11".
3. Put your name, the name and address of your mill, your job, and your home address on the cover sheet **only.** This information must **not** appear in the manuscript.
4. Mail entry postmarked before midnight, **MARCH 31, 1960** to:

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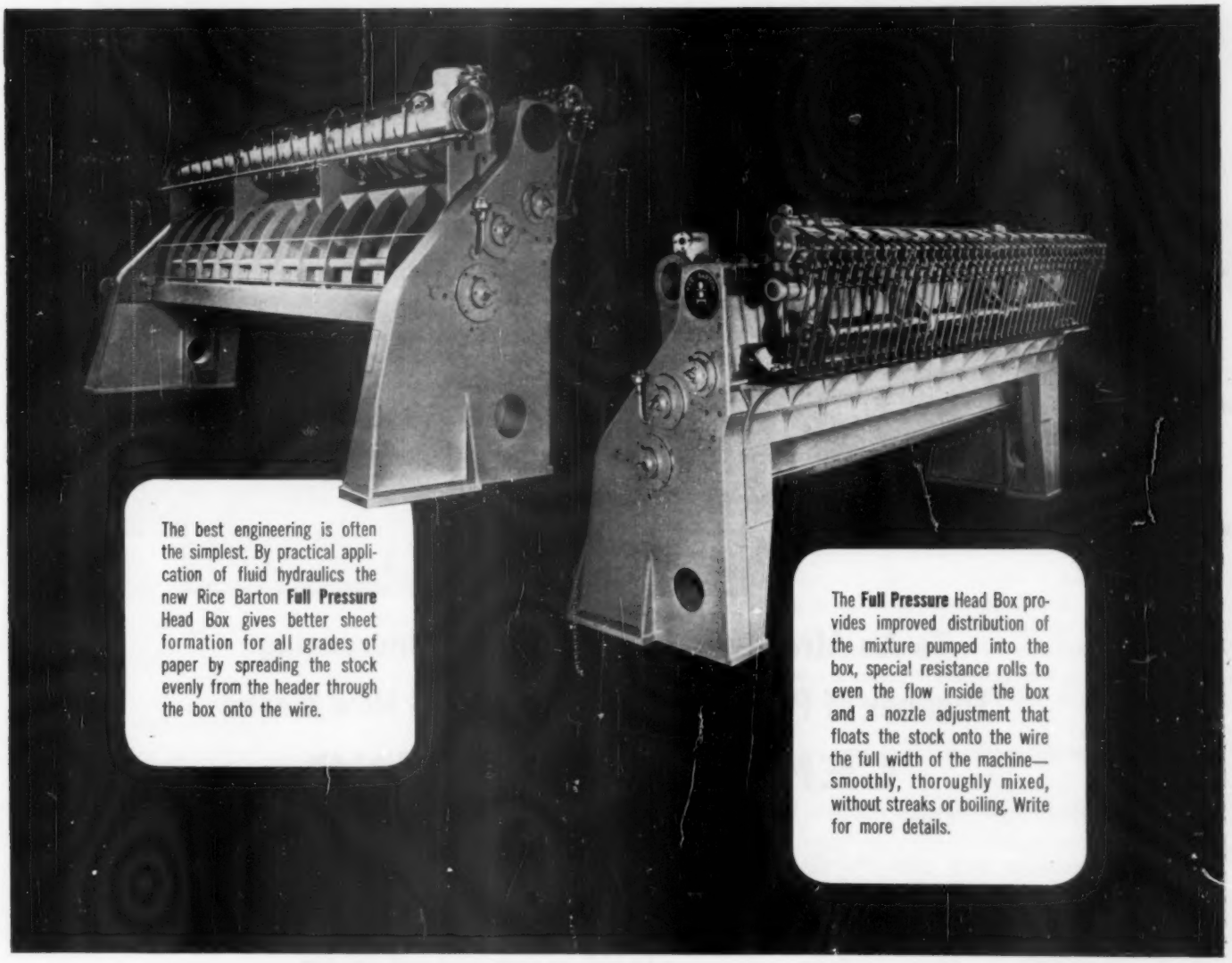

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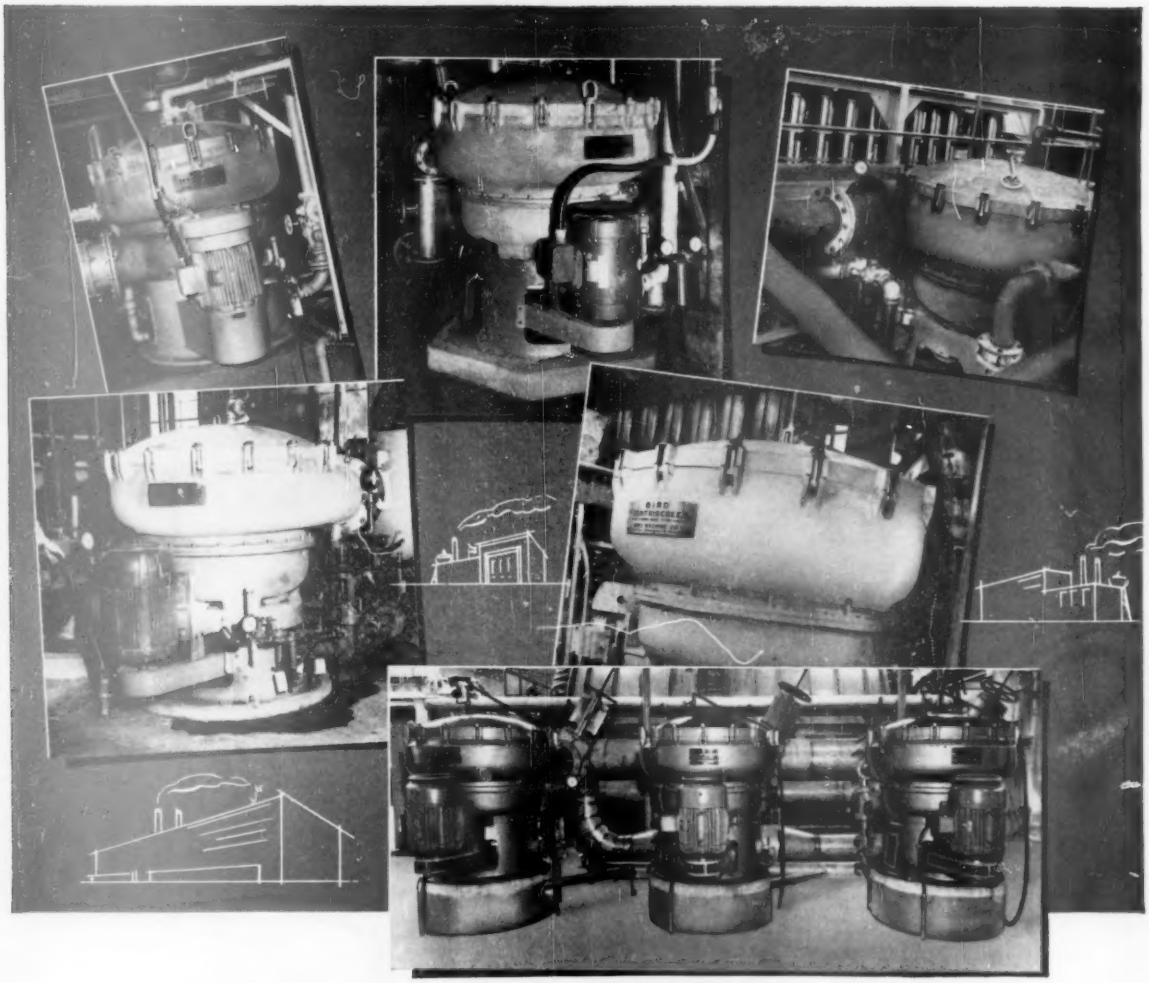

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PULP & PAPER

Reader's Guided Tour

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60 The Challenge of the "Sixties"

Modern equipment (like this machine at Riegel Carolina) aids industry to face the '60s

Across the continent PULP & PAPER editors talked to industry leaders about the industry's prospects in the next ten years. Their comments make fascinating reading on such developments as automation . . . continuous pulping . . . high density bleaching and refining, etc.

65 What Pulp Consumers Saw in South

Hosts on tour were Ferdinand White (left), pres., and Ted Gilbert, vice pres. of group

Important new installations, improved processes, mighty white pulp. Editor Al Wilson went along with them. His pictures and story tell of an interesting odyssey into Dixieland where pulp and paper production has tripled since the war.

72 Water Supply Becoming Critical

Dr. John Strange

Dr. Strange, spokesman for this industry on one of its most urgent problems, has things to say here that anyone in this industry ought to know for his own future welfare. For instance, that pulp and paper manufacturing is more a producer than a user of water!

91 Wood Production in the Sixties

Helicopters are expected to see increased use in forestry —even used for logging!

What directions will the pulpwood industry take? P&P Editors got some answers from pulpwood managers and foresters: intensive land management . . . improved tree genetics research . . . chip pipelines from forests to mill woodyard, etc.

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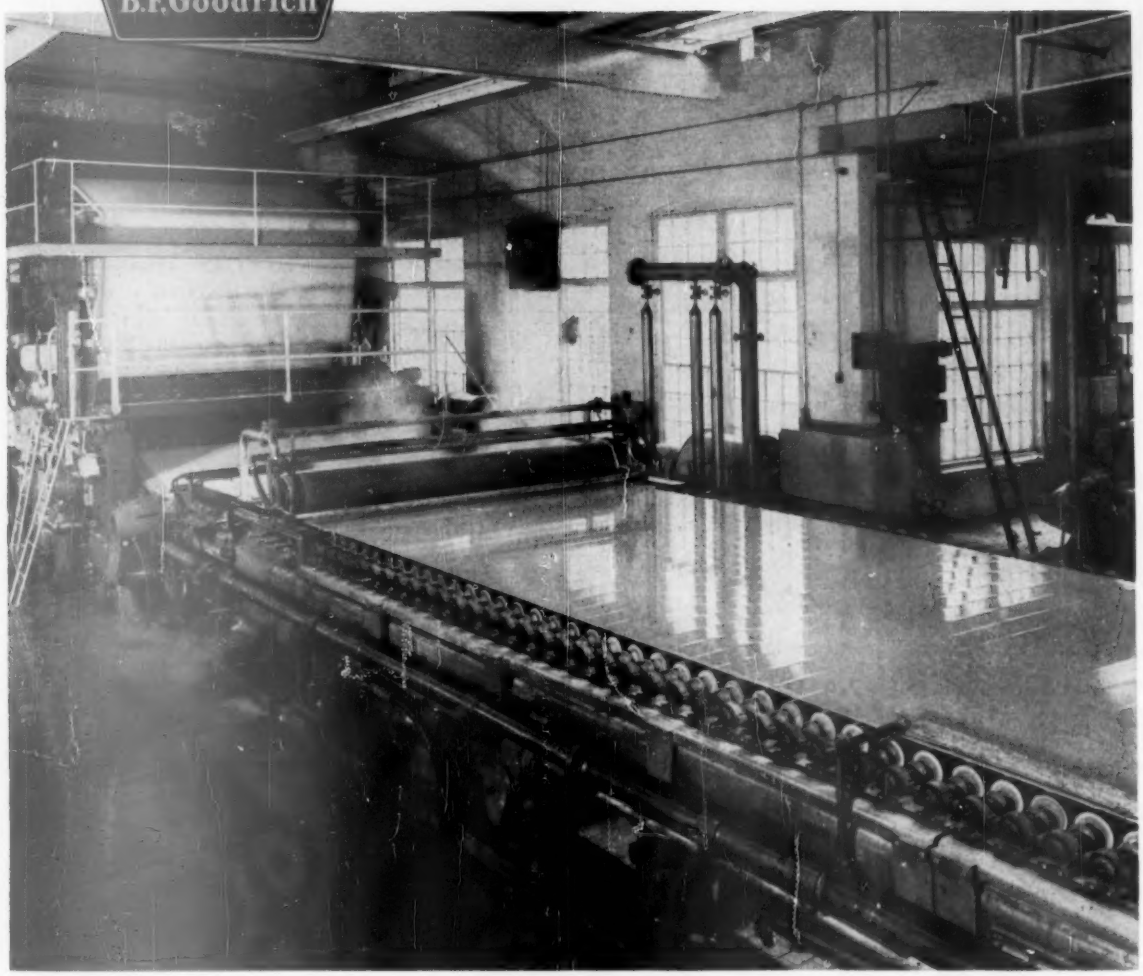
B.F.Goodrich



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MILLER FREEMAN PUBLICATIONS

The Editor Reads His Mail

Address letters to The Editor, PULP & PAPER, 1791 Howard St., Chicago 26, Ill.

What's a Supraton? Refiner or Defibrator?

—San Francisco

Editor: On the Technical News page of your July issue you reported on a paper by Mr. Prokop and Mr. Korda dealing with the Supratonator. There are four points which call for comment:

First: The Supraton is referred to as a refiner. It definitely is not. The stock is defibered without cutting the fibers or wetting them and it can, in fact, be recycled repeatedly without freeness being affected.

Secondly: It is stated that fibers of 1600 mu (34/1000 in.) and over are shortened. This is true only to the extent that a maximum of 4% of such fibers are affected, even with cotton linters.

Thirdly: Consistency has very little influence on the treatment and the machine will readily handle anything between 2% and 8%. The volumetric throughput remains constant for any one gap setting. What may have misled Messrs. Prokop and Korda is that when consistency is lowered the quantity of dry pulp is less and, consequently, receives more treatment.

Fourthly: Gap width (12/1000 to 60/1000 in.) is governed by the type of furnish, the degree of defibering (up to 100%) to be done and by the dry throughput required at the normal working consistency of the mill.

ROBERT O. SYMON
Pacific Supraton

Editor's Note.—Our abstract merely stated the opinions of Messrs. Prokop and Korda as published in the original Czech article. We rechecked the paper, and our abstract is quite correct.

The Czech authors definitely call the machine a refiner. We still think that's what it is, even if Mr. Symon would like to put his fiberizer into a class apart from all other stock preparation equipment.

Later information from Mr. Symon states that the Supratonator is a German patent and is identical with the Supraton, which is the name given by the French licensees, S.E.I.L.A. S/A of Paris, who have the rights for France, England, and North America. Messrs. Prokop and Jorda, therefore, would have worked with German made equipment.

"Excellent" Symposium Report

—Institute of Paper Chemistry, Appleton, Wis.

Editor: I have been reading the November issue of PULP & PAPER, and I am indeed pleased to see the excellent writeup which you have given to the TAPPI Symposium on Fiber Attraction and Bonding held here at the Institute in September. You certainly did a fine job, and we want to express our appreciation.

ROY P. WHITNEY
Chairman, TAPPI's Fundamental Research Committee

MEETING DATES CALENDAR

January 12
Ohio TAPPI
Manchester Hotel, Middletown, Ohio
January 14
Connecticut Valley PIMA
Publick House, Sturbridge, Mass.
January 21
Fourth Annual Pulp & Paper Conference
Western Michigan Univ., Kalamazoo
January 21
Kalamazoo Valley TAPPI-Michigan PIMA
Hotel Harris, Kalamazoo, Mich.
January 25-28
Plant Maintenance & Engineering Show
Convention Hall, Philadelphia, Pa.
January 26
Golden Gate District TAPPI (Tour of California Forest Products Laboratory)
Hotel Claremont, Berkeley, Cal.
January 26-29
Canadian Pulp & Paper Assn.
Montreal, Canada (Technical Sec. at Hotel Elizabeth)
February 1-4
Instrument Society of America (Instrument-Automation Conference & Exhibit)
Rice Hotel, Sam Houston Coliseum, Houston, Texas
February 18
Michigan Division PIMA
Hotel Harris, Kalamazoo, Mich.
February 20
28th Annual Fernhopper Banquet
Oregon State College School of Forestry, Corvallis, Ore.
February 22-25
Paper Week (APPA, SAPI, TAPPI)
Waldorf-Astoria and Commodore, New York, N. Y.
March 22-23
Folding Paper Box Assn. of America (Annual Meeting)
Ambassador Hotel, Los Angeles, Cal.
March 27-30
National Paper Trade Assn. (Annual Meeting)
Waldorf-Astoria, New York, N. Y.

Paper sculpture by Giuseppe Baggi

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Bleached, Semi-Bleached, and Unbleached Kraft

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MONTHLY REPORT – WORLD NEWS

INDUSTRY OPTIMISTIC . . . U.S. pulp and papermakers face substantial income and production gains, according to prominent spokesmen: Kimberly-Clark Corp.—"We expect sales will continue to improve, and that earnings will increase materially over the next six months." Mead Corp.—"We hope that our earnings this year will increase about 20% per share over 1958." Crown Zellerbach Corp.—"Since we are confident that demand will continue to rise during the 1960's, it is very possible that we may step up our capital expenditure rate during the years 1962-1964."

NEW FIRM FOR FLORIDA . . . where Florida Gulf Fibre Co. will build a $13,500,000 paperboard mill at Port St. Joe. According to St. Joe Paper Co., the new company will utilize west Florida hardwoods in semichemical pulping.

U.S. MILL SETS NEW RECORDS . . . The big Savannah, Ga., kraft paper and board mill of Union Bag-Camp Paper Corp. has set new world marks for monthly and daily production by a single plant. In November 64,355 tons were made on six machines; best day, 2,145. More records promised soon: In December, No. 7 machine (236-in. Beloit) was to go into production on lightweight papers at speeds of about 3,000 fpm.

PRODUCTION INCREASE ON WEST COAST . . . where Grays Harbor Pulp & Paper Co., Hoquiam, Wash., will more than double capacity for fine and printing papers (from 30,000 to 70,000 tons). A new machine is to be installed at a cost of $10,000,000. (Grays Harbor is owned jointly by Rayonier Inc. and Hammermill Paper Co.)

$28,500,000 EXPANSION AT TACOMA, WASH. . . . where St. Regis Paper Co. will more than double capacity of integrated kraft pulp and paper mill. Second paper machine (400 daily tons paper and board) is being installed and pulp mill expanded. Completion set for 1961.

CONSUMPTION ZOOMS . . . according to Wm. A. Hanaway, sec. of International Paper Co. In 1959, he predicts, U.S. use of paper, paperboard should be 38,300,000 tons—8 1/2% above 1958 and 5% above previous high (1956). For 1960: "Up perhaps 3 to 4% from 1959."

CROFTON PULP EXCEEDS EXPECTATIONS . . . says C. D. Dickey Jr., president of British Columbia Forest Products Ltd., whose new Vancouver Is., B.C. mill recently completed its first 12 months. "The mill, designed for a daily rate of 425, has proven its ability to produce in excess of 600. . . . We now have customers in more than 250 paper mills in 20 countries."

POTLATCH BUYS ARKANSAS SITE . . . Potlatch Forests Inc. picked a possible site near McGehee, Ark., for its 300 ton foodboard and paperboard mill, but as previously reported here market conditions will determine when construction commences.

ECUSTA ADDS REWINDER . . . A 2,650-fpm Samuel M. Langston rewinder has been installed at the Ecusta Paper div., Olin Mathieson Chemical Corp., Pisgah Forest, N.C. Unit is said to be four times faster than previous machines, can be operated by one man.

INCOMES ON THE RISE . . . for U.S. firms. Nine-month net earnings: International Paper Co.—$60,422,244, up $12,422,080 from year ago; St. Regis Paper Co.—$19,772,667, up $6,577,614; Scott Paper Co.—$17,708,250, up $1,770,747; Container Corp. of America—$12,750,000, up $2,057,000; Mead Corp.—$10,427,251, up $2,477,178; Union Bag-Camp Paper Corp.—$14,043,093, up $3,251,277; Hammermill Paper Co.—$2,161,258, up $478,364; Minnesota & Ontario Paper Co.—$4,423,420, up $874,927; Consolidated Water Power & Paper Co.—$4,930,049, up $460,072; Great Northern Paper Co.—$1,082,985, up $756,637; Puget Sound Pulp & Timber Co.—$3,356,771, up $1,222,960.

. . . Fluid Power news

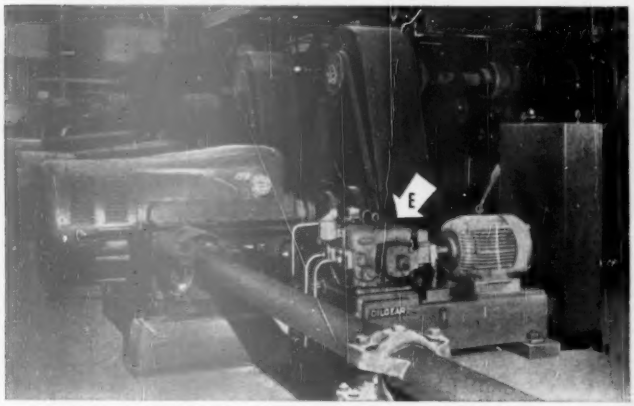
REPORT No. 12,104 OILGEAR SOLVES SPEED CONTROL PROBLEM

From Oilgear Application-Engineering Files

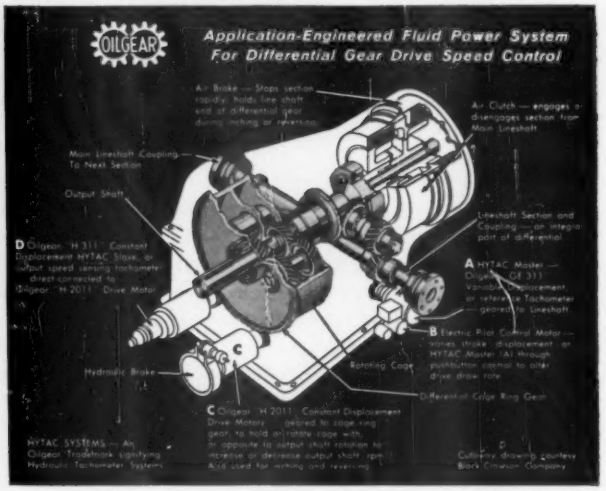
HOW HYTAC SYSTEMS CONTROL DIFFERENTIAL DRIVE SPEEDS ON NEW 190" PAPER MACHINE

USER: *Sonoco Products Company, Hartsville, South Carolina*
BUILDER: *The Black-Clawson Company, Inc., Paper Machine Division, Watertown, New York*

DATA: To design and build a differential-type drive, Black-Clawson engineers outlined the following over-all requirements: 1. To be rugged, simple, and have easily replaceable parts. 2. Speed variation device to control sizes from 150 to 1200 hp, and be capable of performing additional functions — inching, reversing, and slack take-up. 3. Device must maintain synchronous speed regardless of load or temperature changes. 4. Complete drive must be compact, clean design • After solution of gear mechanism problems, the following additional requirements were outlined for the speed variation system: 1. Simple, remote, section control panels, with all controls interlocked. 2. Draw range of at least ±4½%, precisely variable. 3. Must be capable of 24-hour continuous drive service with an absolute minimum of maintenance. 4. Would prefer one source, one responsibility for entire control system. (Mechanical, electrical, and hydraulic systems were investigated.)



A portion of Sonoco Products Company's new "Mr. Mac" — 190" (170" trim) Black-Clawson paper machine designed to produce 9-pt., semi-chemical corrugating board at speeds up to 1500 fpm. "Mr. Mac" is the first paper machine to be fully equipped with differential gear drives on which speed is hydraulically controlled and operated. Three of these new Oilgear Fluid Power Controlled, Black-Clawson differentials are shown above with one of the accompanying Oilgear "Power-Paks" clearly visible. These drives are used on the couch roll, first press, second press, first dryer section, breaker stack, second dryer section, calendar stack, and "autoflyte" reel . . . a total of 8 drives—5 rated at 150 hp, 3 rated at 300 hp.


OILGEAR
Application-Engineered Fluid Power System
For Differential Gear Drive Speed Control
Air Brake — Stops section rapidly; holds line shaft and at differential gear during inching or reversing
Air Clutch — engages or disengages section from Main Lineshaft
Main Lineshaft Coupling To Next Section
Output Shaft
Lineshaft Section and Coupling — an integral part of differential
D Oilgear "H 311" Constant Displacement HYTAC Slave, or output speed sensing tachometer direct-connected to Oilgear "H 2011" Drive Motor
A HYTAC Master — Oilgear "DE 311" Variable Displacement or rotary Tachometer — geared to Lineshaft
B Electric Pilot Control Motor — varies stroke displacement of HYTAC Master (A) through pushbutton control to alter drive draw rate
C
Hydraulic Brake
Rotating Cage
Differential Gear Ring Gear
C Oilgear "H 2011" Constant Displacement Drive Motors — geared to gear ring gear, to hold or rotate cage with, or opposite to output shaft rotation to increase or decrease output shaft rpm. Also used for inching and reversing
HYTAC SYSTEMS — An Oilgear Trademark signifying Hydraulic Tachometer Systems
D
Cutaway drawing courtesy Black Clawson Company

SOLUTION: Application-Engineered *HYTAC SYSTEMS* arranged through teamwork between Oilgear and Black-Clawson engineers throughout the stages of design, testing, application, and actual installation.

Black-Clawson states — *"operating characteristics highly important to any papermaking machine are obtained through a unique hydraulic motor differential cage drive and a HYTAC SYSTEM (hydraulic tachometer feedback control arrangement). Significant features of this HYTAC drive are: 1. Machine sections can be inched or reversed with line shaft running or down. 2. No helper motors needed — no belts or chain drives involved. 3. Accurate speed regulation. 4. Precision draw control for all applications — 9% draw range. 5. HYTAC SYSTEM maintains speed regardless of load or temperature changes. 6. Hydraulic mechanism and control panels can be located remotely from drives. 7. Complete drive control interlocked. 8. Load on machine sections indicated by pressure gages on drive. 9. Compact, durable construction. 10. Absolute minimum of maintenance required."* The reasoning that led to selection of HYTAC SYSTEMS has also been clearly stated by Black-Clawson engineers, as follows: *"Mechanical drives had many serious drawbacks, such as horsepower limitations and the inability to perform the desired functions. Choice between electric or hydraulic drive proved more difficult . . . necessity that electronic controls circuits would be required to maintain accuracy, and the larger size of the driving units were the deciding factors in favor of the hydraulic drive. To determine size, an analysis was made . . . here again hydraulic drive proved its superiority, since the drive motor could be driven in both directions. Tests proved that the drive was even more accurate than our original expectations . . . regulation between zero and rated load was only ±0.005%. Under conditions of constant load and speed, a variation of ±0.002% could also occur . . . when added together, maximum regulation is ±0.007%."*

HOW IT WORKS: Fluid from lineshaft-driven master tach (A) gives differential drive speed command to control on Oilgear "DRX 2011" two-way, variable displacement pump (E), indicated in photo, left, of Oilgear "Power-Pak" installation. Slave tach (D) feeds back a flow signal proportional to actual differential drive speed. When main lineshaft speed increases or decreases, fluid flow from Master Tach (A) automatically increases or decreases correspondingly to command differential drive to follow lineshaft speed change. Through local or remote pushbutton stations connected to electric pilot motor (B) on Master Tach (A), operator can increase or decrease speed of each section infinitely up to 9% of prevailing lineshaft speed. When differential cage is rotated with, or in same direction as the output shaft by motors (C), output shaft speed is increased. If cage is rotated in the opposite direction by motors (C), output shaft speed is decreased. All factors, such as change in load or temperature, are automatically compensated by these HYTAC SYSTEMS to maintain exact, set degree of section synchronization with lineshaft at all times.

Accurate synchronization of multiple, tandem operations; combining separate operations to handle webs or sheets — soft, fragile at one point — strong at another; or continuous webs when tension affects quality . . . all need more than conventional drives and controls . . . they need the precision of HYTAC SYSTEMS, or other Oilgear "Any-Speed" drives and controls!

For practical solutions to YOUR linear or rotary Controlled-Motion problems, call the factory-trained Oilgear Application-Engineer in your vicinity. Or write, stating your specific requirements, directly to . . .

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MONTHLY REPORT – WORLD NEWS

A STRONG RECOVERY . . . Recent survey shows pulp and paper fast recovering from doldrums (when it was heavily overloaded with production capacity). Estimated 1959 spending is at $63,000,000 rate, $35,000,000 above 1958. Planned for 1960: $828,000,000 (up 35%) and for 1961, $704,000,000.

$6,000,000 FOR FLAKEBOARD PLANT . . . is planned by Crossett Co., Crossett, Ark. Consuming an annual 38,000 cords, it will have production capacity of about 25,000,000 sq. ft.

POLLUTION BATTLE WON . . . at Marathon, div. of American Can Co., Green Bay, Wis. On completion of current construction, no mill effluents will enter the stream, and used water will be treated to cut discharge of fine solids, as well as oxygen demand. $325,000 project includes: pipe lines, pumping stations and settling basins.

WOOD PULP FOR EXPORT IN BIG JUMP . . . U.S. shipments in September totaled 62,872 tons, up sharply from the 44,776 in August and the 32,530 a year ago. Breakdown: dissolving and special alpha wood pulp — 40,413; bleached sulfite — 4,850; unbleached sulfite — 1,911; bleached kraft — 9,588; semi-bleached kraft — 1,464; unbleached kraft — 4,390, and soda — 111.

FOR NEWSPRINT: AN ALL-TIME HIGH . . . October North American production was 770,506 tons — all-time high for any month on record, 10.2% above year-ago volume. U.S. output did it — 177,325 tons, largest monthly volume in history. For U.S. and Canada 10-month volume was 6,920,347 tons, 5.5% above 1958.

MERCHANTS' ROLE IN PAPER DISTRIBUTION . . . is being emphasized in a series of ads by Hammermill Paper Co. One ad points out: "The merchant gives you a chance to choose from among the many brands and grades of paper he carries. Ask for his advice, and you'll get an unbiased, best-for-the-job answer."

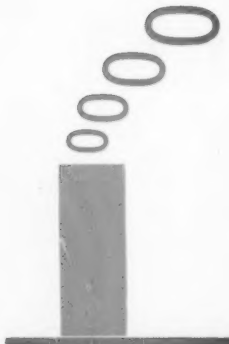
TEMPORARY DAMPENING . . . forecast by Seattle First National Bank: "Pulp and paper tends to follow general business trend rather than construction cycle. It will not be hurt by some factors affecting lumber and plywood but may suffer from temporary dampening of economic activity caused by steel strike."

FULL PRODUCTION AT DEMOPOLIS, ALA. . . . where Gulf States Paper Corp. is producing both Lo-Thermo pulp and bleached board at relatively new mill. Expansion from bleached market pulp mill to both pulp and board began in 1958.

IMMEDIATE OPERATION . . . was planned for the new Berkshire Tissue Mills Inc., Becket, Mass. The firm — formed by officials of Carolina Paper Mills Inc. and Resolute Paper Products Corp. — will make tissue in facial grades and cellulose wadding for sale to converters.

CONTINUED PULPWOOD GROWTH . . . in southern U.S.A., where value of 1958 production totaled $404,660,000 — increase of 2% over 1957, according to U.S. Forest Service 12-state survey.

HOPSCOTCHING THE NORTH AMERICAN INDUSTRY . . . Sealright-Oswego Falls Corp., Fulton, N.Y., has purchased Nashua Corp.'s interest in Canadian Sealright Co. Ltd., Peterborough, Ont. . . . New fine paper distribution is being provided by General Paper Corp. of Texas, Dallas. . . . Strike by two unions is continuing shutdown of Hudson Pulp & Paper Corp.'s huge tissue and kraft paper mill at Palatka, Fla. . . . Mead Corp. breaks ground at Chillicothe, Ohio, for its $1,400,000 research center. . . . Nekoosa-Edwards Paper Co. constructing at Nekoosa, Wis., a 24,000-sq. ft. pulp storage and shipping building. . . . Champion Paper & Fibre Co. plans acquisition of Montag Bros. Inc., Atlanta, Ga., manufacturer of school supplies and stationery. . . . St. Regis Paper Co. may acquire Schmidt & Ault Paper Co., York, Pa., paper and board producer.



DAREX LATEX C

went through the mill

to earn its new name...

flotrol C

Some months ago, Dewey and Almy research perfected a remarkable new paper coating latex binding agent. It looked so good we put it right on the market as DAREX LATEX C.

While Latex C was proving its outstanding performance features in job after job, at mill after mill, we looked for a permanent name. We found it in FLOTROL C (for Flow Control Coating).

Here is what this remarkable new latex job-proved that it can do for you:

flotrol C permits full control of viscosity and color pattern . . . gives lower viscosity for smoother, glossier paper finish.

flotrol C produces a superior printing surface even when your formula has a high solids content.

flotrol C is compatible with a variety of coating formulations including casein, starch, soya protein—may be used with any type coater.

flotrol C has low foaming characteristics and an unusual degree of mechanical stability.

flotrol C is chemically stable to polyvalent ions, calcium and a wide pH range.

flotrol C makes possible faster coating, faster drying with less heat . . . more production per working day.

Ask your Dewey and Almy Salesman for full details. Or write Organic Chemical Sales.

W. R. GRACE & CO.
DEWEY AND ALMY CHEMICAL DIVISION
Cambridge 40, Mass.

MONTHLY REPORT – WORLD NEWS

REMAINING CONTROLS ON IMPORTS . . . from Western Europe's dollar area and a number of other countries have been abandoned by the British Board of Trade.

INDIA PROJECT ENGINEERS . . . Manderstam, Lowe & Partners Ltd., London, England, has been named consulting engineer to the first non-integrated bamboo pulp mill in the world. The 100-ton unit is being built by Assam Pulp Mills Ltd., Kamsakhang (Assam), India. Cost of the project: $11,200,000 (£4,000,000).

MODERN PACKAGING GROWTH IN SWEDEN . . . shown by latest "super market" (self-service store) figures. Nation maintains her lead in Europe with one self-service store per 1,800 inhabitants. Other countries showing gains: Switzerland — one for 3,400; Western Germany — one for 5,900; England — one for 10,200; Netherlands — one for 10,700.

EUCALYPTUS: SICILIAN RAW MATERIAL . . . A leading Italian manufacturer is said to be planning a pulp and paper operation in Sicily at a cost of $10,400,000. Annual production: 30,800 tons paper (28,000 metric). Already, 300,000 acres have been planted with eucalyptus.

MASS EDUCATION AND EXPANDING INDUSTRY . . . is said to be cause of rapid expansion of paper production in Chinese People's Republic. Production during first five-year plan (1953-57) is reported to have climbed from 594,000 tons (540,000 metric) to 1,320,000 (1,200,000), an average annual increase of 20%. Established for the second five-year plan (1958-62): an average annual increase of 19.4%.

REEVALUATION OF NEWSPRINT CONSUMPTION FORECASTS . . . may result in accelerated U.S.A. demand. If advertising continues increase, newspapers by year's end will have consumed 150,000 tons more than anticipated, a 7-1/2% increase over 1958. If current demand persists, say some experts, today's substantial reserve capacity may be completely absorbed by 1963.

PAPER PROMOTION IN WEST GERMANY . . . has been unqualified success. The campaign, a joint venture of producers, was undertaken in 1953 (when per capita consumption was 36 kilos — 79.2 lbs.). Nine promotional and one cultural film were shown to nearly 42,000,000 people. Also used was extensive campaign of advertising and news releases. Result: 1958 per capita consumption stood at 66 kilos (145.2 lbs.).

MANY NEW MATERIALS . . . together with new paper and board packaging developments, are set for display at Interpack in Düsseldorf, W. Germany, April 20-27.

BAG PLANT FOR DOMINICAN REPUBLIC . . . where Industrias Nigua is turning out 90,000 bags per day for sugar, cement and fertilizer industries. Claimed that the equipment installed will satisfy demands for next 20 years. Dominican workers have been trained by U.S. and German experts.

CANADIAN WOOD PULP PRODUCTION UP . . . over a year ago. October registered a record 987,113 tons, up 8.2% from the same 1958 month.

REDUCING SPAIN'S IMPORT NEEDS . . . is the new cellulose and paper mill of Sociedad Anónima Española de Cellulosas at Duenas. Raw material: straw. Equipment supplied principally by U.S. and West Germany.

NEW KRAFT PAPER MACHINE FOR NORWAY . . . has been ordered by Hurum Fabriker Lövenskiold-Voekero. The unit for high-quality production will have an annual output of between 6,600 and 8,800 tons (6,000-8,000 metric). Total cost of the project: $980,000 (Kr 7,000,000).

FORERUNNER OF A MAJOR NEW ZEALAND INSTALLATION . . . is consideration of a $99,400 (£35,500) pilot plant for bleaching of semi-chemical pulp at Whaktane Board Mills Ltd. Under construction: $112,000 (£40,000) high-density storage system for semi-chemical pulp mill. A chip silo and other equipment will cost $123,200 (£44,000).

PULP PAPER

Offices and representatives
in 60 cities in the United States,
Europe, Latin America,
Africa, and Asia.

BULKLEY DUNTON
ORGANIZATION

WORLD PULP & PAPER Technical News

Lignin Reactions—Sweden

GIERER, JOSEF, and ALFREDSSON, BO Svensk Papperstidn. 62, no. 12: 437-7 (June 30, 1959). [Ger.] Abstr. Bull. I. P. C. 30: 177-8.

Treatment of thiolignin preparations obtained from Brauns native lignin and Björkman milled-wood lignin with neutral sulfite solutions resulted in the formation of lignosulfonic acid which contained all sulfur in the form of sulfonic acid groups. The amount of these groups corresponded roughly to that calculated under the assumption that one sulfide group of thiolignin is replaced by two sulfonic acid groups. A similar substitution could be demonstrated for lignin-model compounds (*p*-hydroxyl-benzyl sulfides). The ratio of acid-labile sulfur-contg. groups (which were shown in previous studies to be attached predominantly to benzyl positions) to total sulfur was the same before and after sulfonation in neutral solution. Sulfonation of thiolignins in acid media was less complete, apparently because of complex condensation reactions. These results support the view that the same reactive groups participate in both the sulfidation and sulfitization reactions of lignin.

Liquor Recovery—Sweden

JÖNSSON, SVEN-ERIK, Svensk. Papperstidn. 62, no. 12: 425-33 (June 30, 1959). [Swed.] Abstr. Bull. I.P.C. 30: 209.

For the recovery of pulping liquor by pressing of the pulp, one can use a single press, several presses connected in series, or a combination of presses and other recovery systems. Equations are given relating the dry-solids yield to the concentration ratio for a variable no. of presses. Results obtained, using presses alone or combined with other recovery systems, are presented for initial liquor weights of 2-10 tons per ton of o. d. pulp. The recovery yield depends for its success on a high pulp consistency after pressing. Satisfactory results can be obtained with initial liquor/pulp ratio and on a high calcium-base sulfite and semichemical liquors, using two presses of available design connected in series. With kraft pulp, three or more presses in series are required to achieve results comparable with those obtained in diffusor washing. Presses have the following advantages: moderate power and space requirements, closed-system operation, absence of foaming, and good recovery yields. Disadvantages include plugging (with certain press designs), risk of deposits on screen plates (when recovering calcium-base liquor), and high investment costs for series installations. Screen deposits can, however, be controlled by washing with acidic condensate or with water containing sulfur dioxide.

Presented with permission of The Institute of Paper Chemistry, under supervision of Curtis L. Brown, editor of IPC Bulletin. Photostats or translations of original reports available at reasonable cost by writing Eugene Bunker, librarian, Institute of Paper Chemistry, PO Box 498, Appleton, Wis., U.S.A.

Rub Resistance—Poland

MACIEJKO MARIA, and NIERYCHLEWSKI, TADEUSZ. Przeglad Papierniczy 15, no. 5: 129-33 (May, 1959). [Polish] Abstr. Bull. I.P.C. 30: 196.

Tests sheets ranging in basis weight from 70 to 240 g./sq. m. made on a Rapid-Köthen machine from four unbleached kraft pulps of different hardness and different degree of beating, as well as commercial samples of abrasive backing paper, bag papers, and offset and coated printing papers were tested for their dry and wet rub resistance in an apparatus of the Fiebiger-Reich type. The wet rub test gave more reproducible results than the dry rub test. For the latter at least six parallel determinations were needed to obtain statistically significant values. Rub resistance was related directly to the beating degree and hardness of pulp and to the basis weight of paper. Resin-impregnated papers (e.g., abrasive-paper backing) had a higher rub resistance than rosin-sized papers. Surface sizing increased the rub resistance of offset papers.

Acaciawood Use—Slovakia

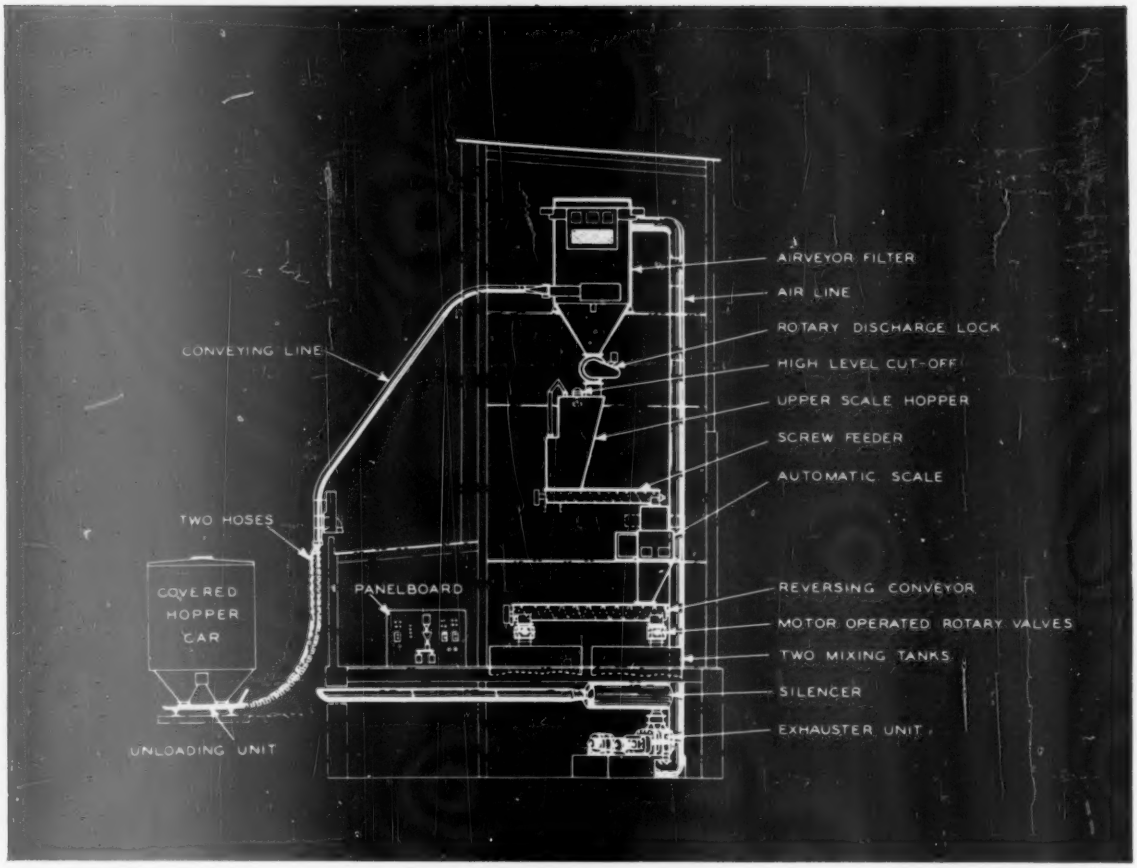
KOZMAL F., and BUCKO, J.Papir a celulosa 14, no. 4: 73-7 (April, 1959). [Slovakian] Abstr. Bull. I.P.C. 30: 217.

Common xacacia (*Robinia pseudoacacia*) is a relatively fast-growing species and thrives well in almost any soil, swamps excepted. The logs are easily barked and highly resistant to storage, even at high humidity. Acaciawood is characterized by thick-walled relatively short fibers (0.75-0.87 mm.), and a high content (30-40%) of parenchyma cells which are, however, removed easily from pulp during washing. In its chemical composition acaciawood resembles beechwood. Sulfite and kraft pulps obtained in lab. cooks from native and water- alcohol-benzene-extracted and acaciawood had satisfactory mechanical strength props.: a breaking length of 3674-4695 m. and a folding endurance of 29-67 double folds at 32-56° Schopper-Riegler. The sulfite pulp yield was 40.9-42.9%, the kraft pulp yield was 38.6-40.37%. No significant differences were observed between pulps obtained from natural and extracted wood. Pulps bleached by a 5-stage process gave an average yield of 41%, had an average brightness of 87%, an α-cellulose content of 89%, and a viscosity of 16.9 cp. Acaciawood pulps can find applications in the manufacture of absorbent papers and other products for which a material of high specific volume is desired.

Eucalyptus Sulfite—Germany

JAYME, GEORG, and BRANSCHEID, FRIEDRICH. High-strength sulfite pulps from *Eucalyptus saligna*. Das Papier 13, no. 13/14: 284-6 (July, 1959). [Ger.] Abstr. Bull. I.P.C. 30: 216.

Relatively mild sulfite digestions of *E. saligna* wood gave very strong pulps. The max. cooking temp. was 120-125°C. for a max. total heating period of 9 hr. (6 hr. at max. temp.). Screenings were low, and the average yield was 57%. Except for shortened cooking times, the lignin content was 2.4-3.4%, and the chlorine demand was 5-8%. The pulps were readily fiberized and, at 65-70° Schopper-Riegler, showed strength properties comparable with those of spruce sulfite pulps. Under optimum conditions, an unbleached eucalypt pulp (at 65° Schopper-Riegler) had a breaking length of 9430 m., a tear resistance of 141.5 cm.-g./cm., a burst strength of *ca.* 5 kg./sq. cm. and a folding endurance of over 3000 double folds. It was readily bleached in three conventional stages, giving a bleached pulp in 51-53% yield (based on original wood weight which had a breaking length of 9510 m., a burst strength of 5.21 kg./sq. cm., and a folding endurance of 5080 double folds. The pulp could be made into paper of high strength without addition of longer fibers.



Fuller conveying system helps paper mill cut clay handling time 65%

At New York & Pennsylvania Company's Johnsonburg, Pa., paper mill a new completely automatic clay slip preparation tower speeds production. New unloading equipment has a capacity of 25 tons per hour. This is in contrast with the old manual method in which 6 men worked 5 hours to unload 30 tons of bag clay. How did New York & Penn do it? With a pneumatic conveying system designed and built by the Fuller Company.

Clay is delivered by railway car. Each car holds 50 tons of clay which drops by gravity through outlets directly into the unloading unit then into the conveying system. This consists of two 5-in. flexible hoses connecting into a main 8-in. conveying line. Clay is conveyed through a Fuller Airveyor® system to an Airveyor filter on the top floor of the building. From the filter, the clay is discharged into a surge hopper through a totally-enclosed Fuller rotary airlock. A Fuller high-level indicator on the hopper automatically opens a vacuum breaker in the conveying line in the event that clay is unloaded faster than the equipment following the hopper can take it away.

In addition to eliminating a manual operation, the enclosed Fuller system has reduced New York & Penn's clay loss and improved their dust problem. Fuller's wide variety of conveying systems and components can help solve your problems, too. Why not write us today?

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TRADE MARK

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Subsidiary of General American Transportation Corporation
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Fuller
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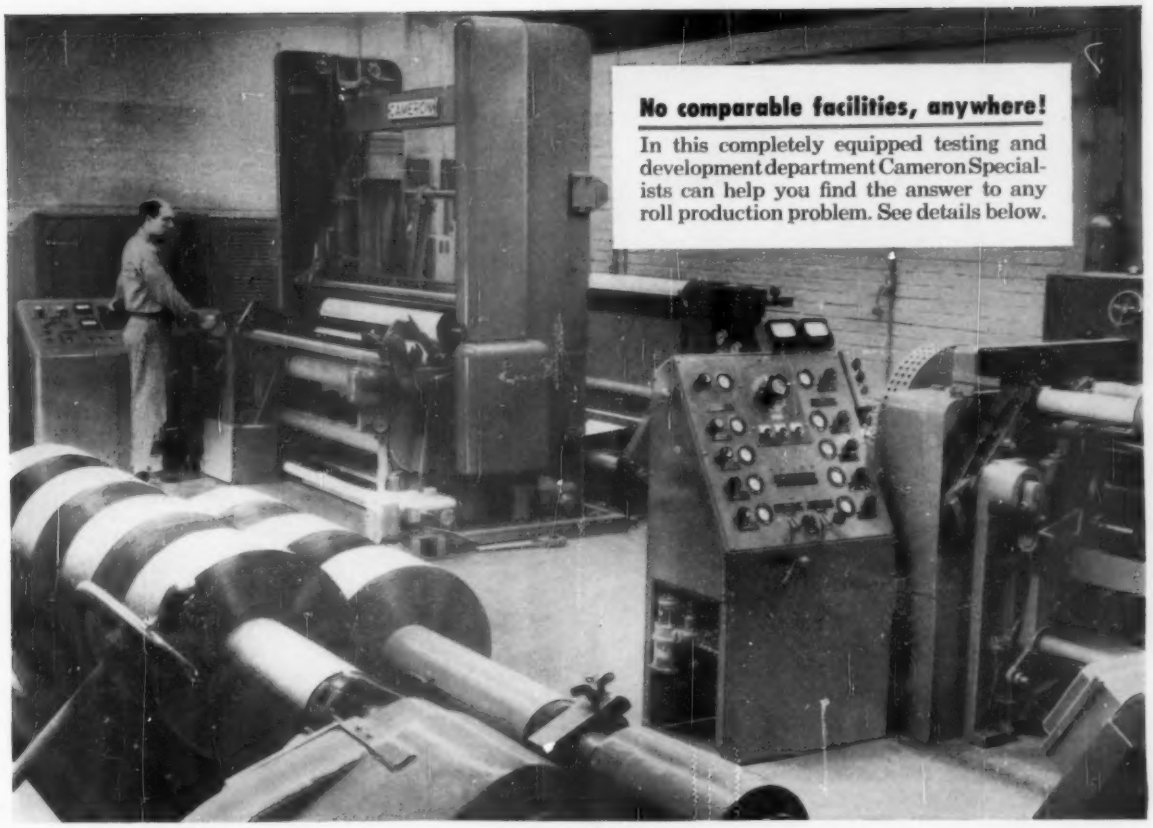
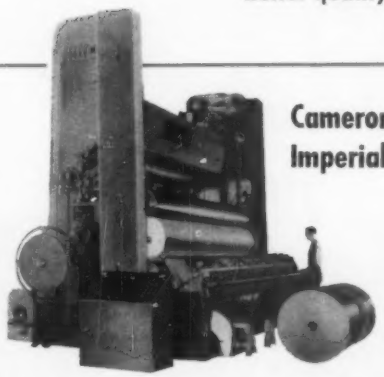


No comparable facilities, anywhere!

In this completely equipped testing and development department Cameron Specialists can help you find the answer to any roll production problem. See details below.

NOW... *see and try* before you buy!

better quality rolls produced faster at lower cost on papers, boards, plastics, foils, metals, laminates, and all other flexible web materials.



Cameron Imperial

High Speed Mill Type Winder – leader of the famous Cameron line of winders, slitter-rewinders, unwinds and web control systems for paper and board mills, finishing rooms and converting plants.

CAMERON TESTING AND DEVELOPMENT provides, for the first time anywhere, an opportunity for you to *see* and *try* duplex combination winding, duplex center winding or two-drum winding; score-cut, shear-cut, razor-cut, burst-cut or hot knife slitting and sealing; pneumatic tensions, oscillating unwinds, electronic and air-operated edge guides and many other web control and auxiliary devices. When necessary, new experimental equipment can be designed and tested. Cameron Specialists supervise test runs on all types of flexible web materials to help you get the most efficient methods and equipment for your requirements.

Services of the new department are free for all users of slitting, winding, unwinding and web control equipment. *See and try before you buy!* Write today for information.

Cameron Machine Company, Franklin Road, Dover, N. J.

Canada: Cameron Machine Co. of Canada, Ltd., 15 Hatt St., Dundas, Ontario
France: Batignolles-Chatillon, 5 Rue De Monttessuy, Paris (7e) France

AA-367

Another service by the CAMERON team of specialists

53 years devoted exclusively to the design and manufacture of slitting, roll winding and unwinding equipment.

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Bleached Sulfite Pulp

PUGET SOUND PULP & TIMBER CO.

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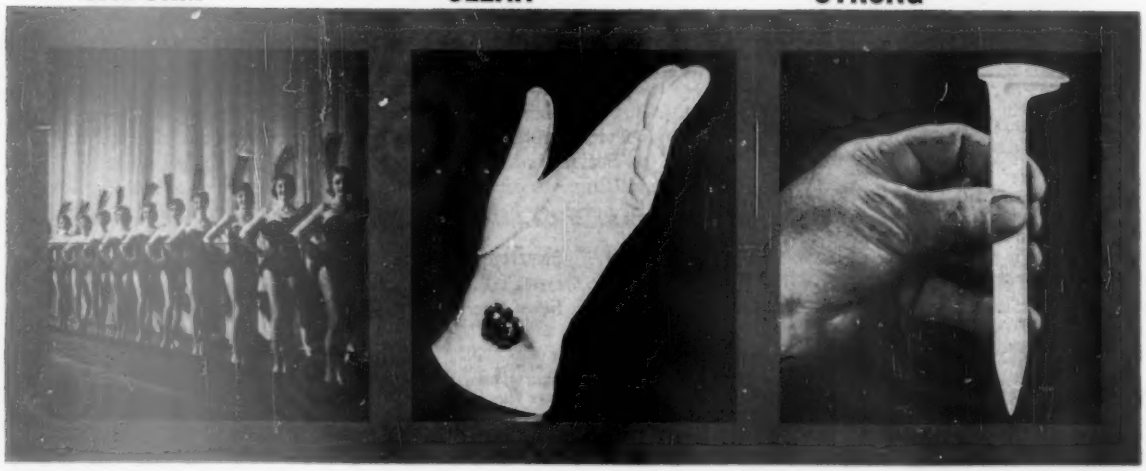
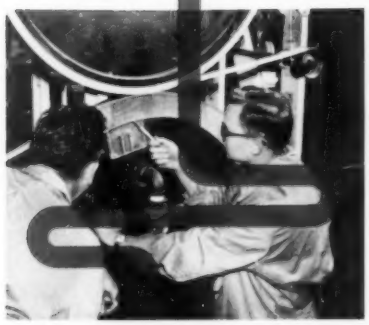
UNIFORM CLEAN STRONG





Beloit Research
dedicated to paper progress

when water leaves the press nip

This suction press has never dewatered a sheet . . . yet it has resulted in improved production on thousands of tons. Beloit research engineers built the full-size cutaway model (above) to study water movement. Data derived from the revealing stopped-action photo and other laboratory tests have led to a better understanding of this phenomenon. Improved sheet and felt runs . . . greater press speeds . . . new economies . . . key items in Beloit's continuing research and development program. Beloit "paperesearch" means paper progress—more efficient machines for you, better paper for your customers.

"STROBE" SHOT SHOWING MOVEMENT OF WATER AFTER LEAVING NIP. PHOTO BY C. B. D HL

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BELOIT
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Beloit machines hold speed and production records on tissue, newsprint, publication grades, kraft, and cylinder board.

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Business letterheads with the mark of quality are made with Glidden Zopaque® Titanium Dioxide

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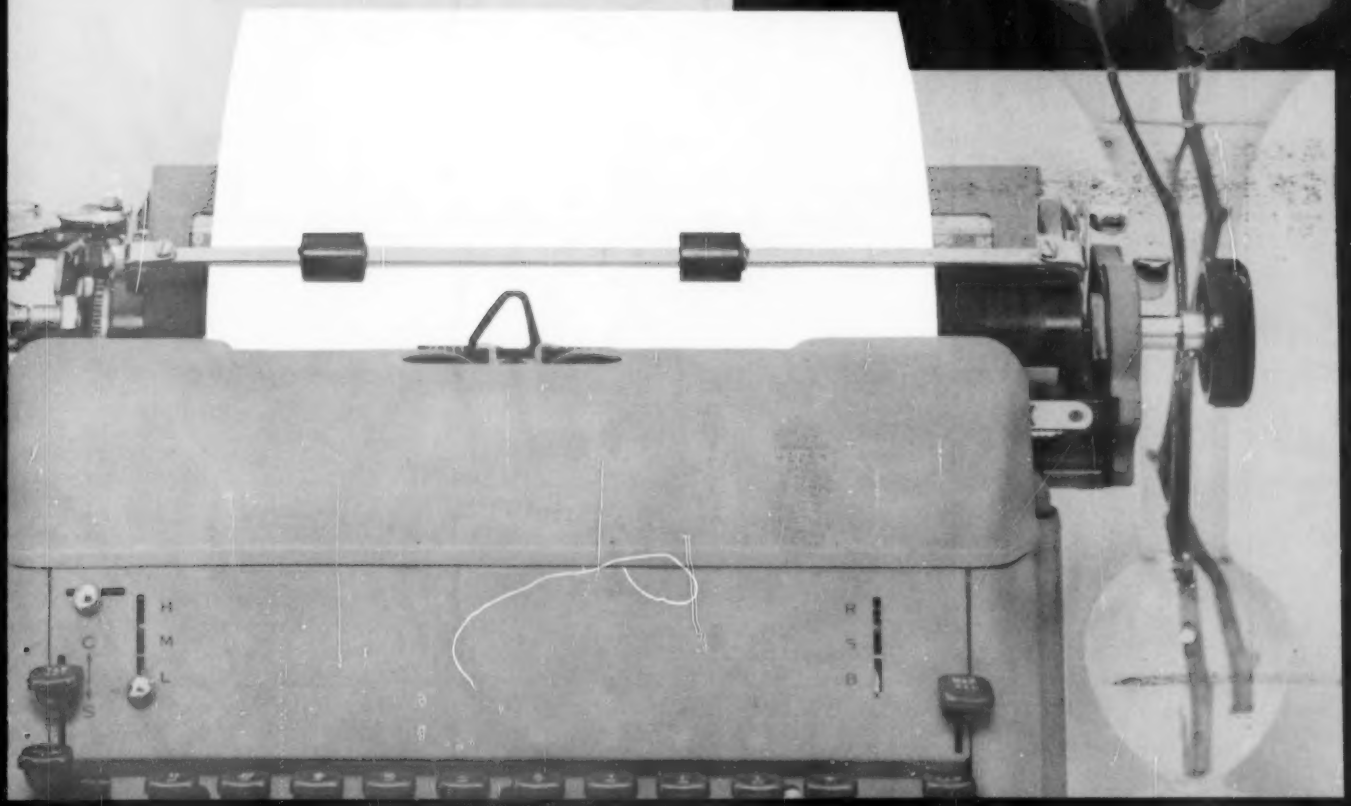
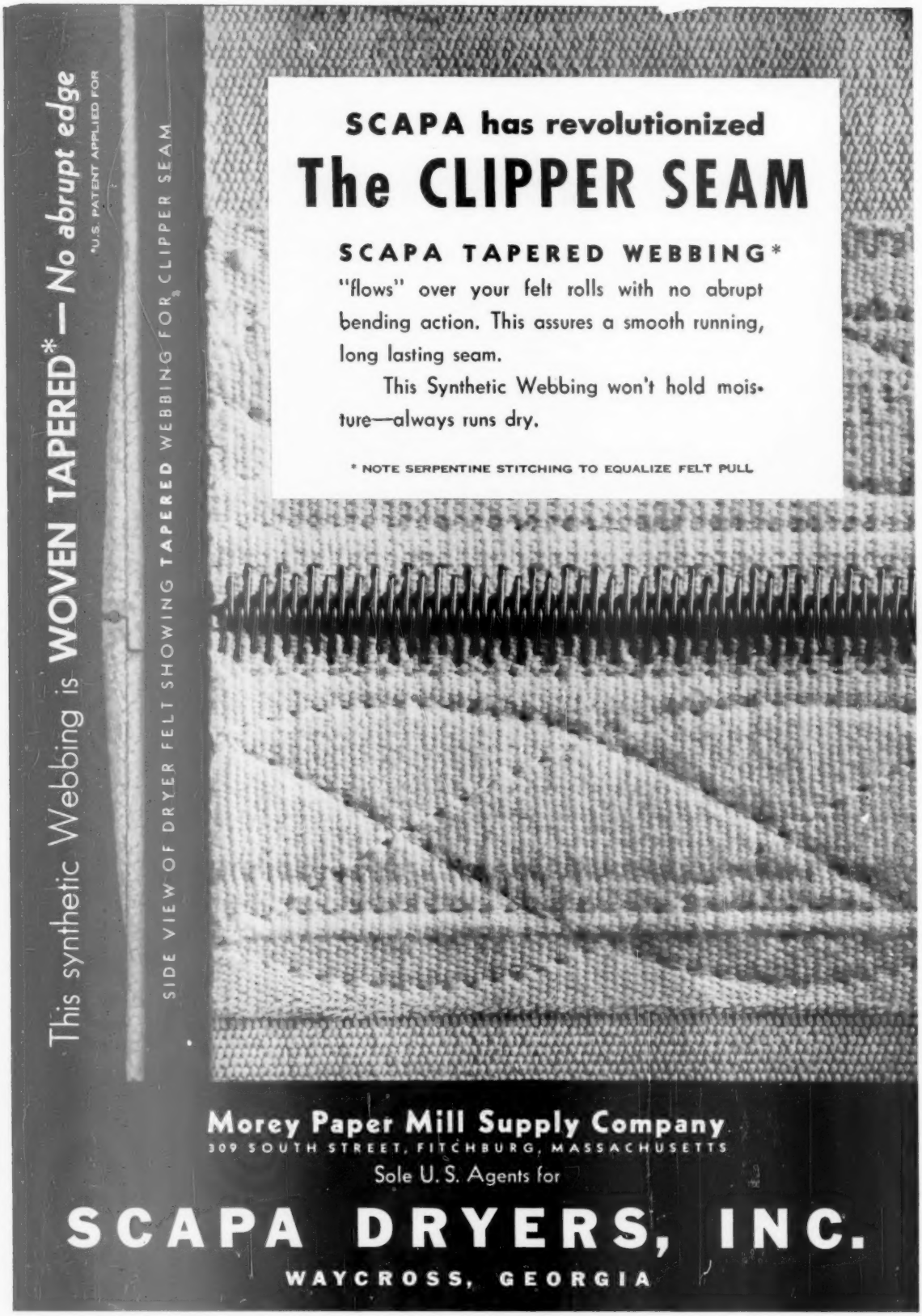
(This advertisement is printed on paper stock containing Glidden ZOPAQUE Titanium Dioxide.)




This synthetic Webbing is WOVEN TAPERED* — No abrupt edge
*U.S. PATENT APPLIED FOR
SIDE VIEW OF DRYER FELT SHOWING TAPERED WEBBING FOR CLIPPER SEAM

SCAPA has revolutionized

The CLIPPER SEAM

SCAPA TAPERED WEBBING*

"flows" over your felt rolls with no abrupt bending action. This assures a smooth running, long lasting seam.

This Synthetic Webbing won't hold moisture—always runs dry.

* NOTE SERPENTINE STITCHING TO EQUALIZE FELT PULL

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309 SOUTH STREET, FITCHBURG, MASSACHUSETTS

Sole U. S. Agents for

SCAPA DRYERS, INC.

WAYCROSS, GEORGIA

3 times the belt-life when the chips were down

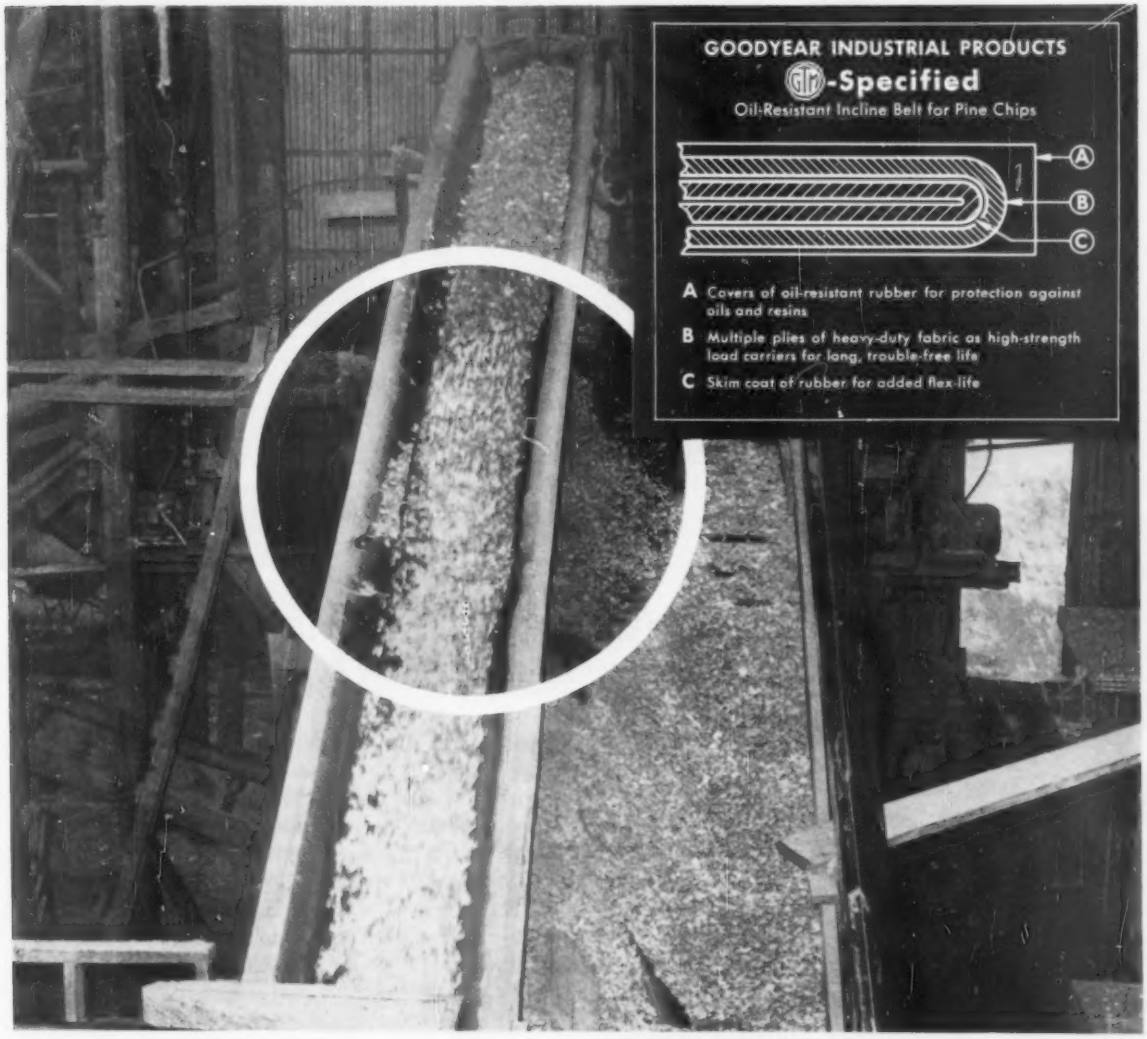
Pine chip oil is the enemy of any conveyor belt. At this Southern paper mill, for example, it kept softening up the chipper belt's cover – flaking off pieces of the rubber–forcing replacement every 2 to 6 months.

What could be done about the frequent shutdowns and recurring high costs, they finally asked the G.T.M.–Goodyear Technical Man. His answer: install a special belt with oil-resistant CHEMIGUM cover – virtually immune to attack from pine oils and resins.

And that did it. For the G.T.M.'s belt has handled its daily torrent of chips for *18 completely trouble-free months* at last report–was still going strong despite stepped up conveyor speed.

And remember–3-to-1 improvements like this aren't at all unusual when the G.T.M. tackles a problem. For you're sure of getting both the best suggestions – and the best-performing industrial rubber products –when you contact him through your Goodyear Distributor. Or you can write Goodyear, Industrial Products Division, Akron 16, Ohio.

Chemigum – T. M. The Goodyear Tire & Rubber Company, Akron, Ohio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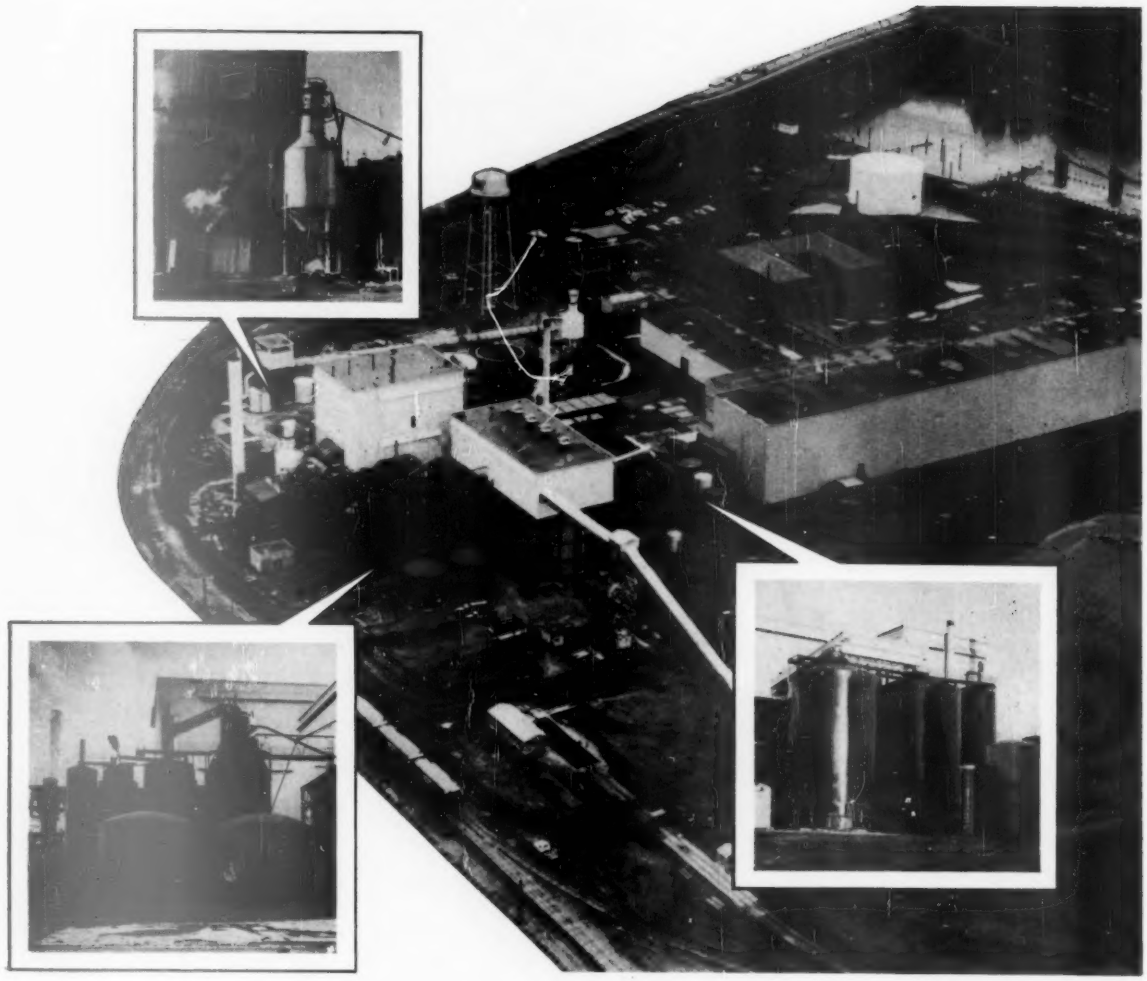
GIP-Specified
Oil-Resistant Incline Belt for Pine Chips
A
B
C
A Covers of oil-resistant rubber for protection against oils and resins
B Multiple plies of heavy-duty fabric as high-strength load carriers for long, trouble-free life
C Skim coat of rubber for added flex-life

CONVEYOR BELTS BY

GOODYEAR

THE GREATEST NAME IN RUBBER



TANKS AND DIGESTERS BY AMERICAN

in the huge Georgia-Pacific Mill

American Pipe and Construction Co., supplied all the steel tanks and digesters as well as the piping, stacks, and miscellaneous steel items required for the Georgia-Pacific Paper Company's 100,000 ton Kraft mill at Toledo, Oregon.

YOU can save money, time and trouble by taking advantage of American's 35 years of experience serving the Northwest as designers, fabricators, and erectors of steel plate installations.

An American sales engineer can be helpful to you in planning your next job.

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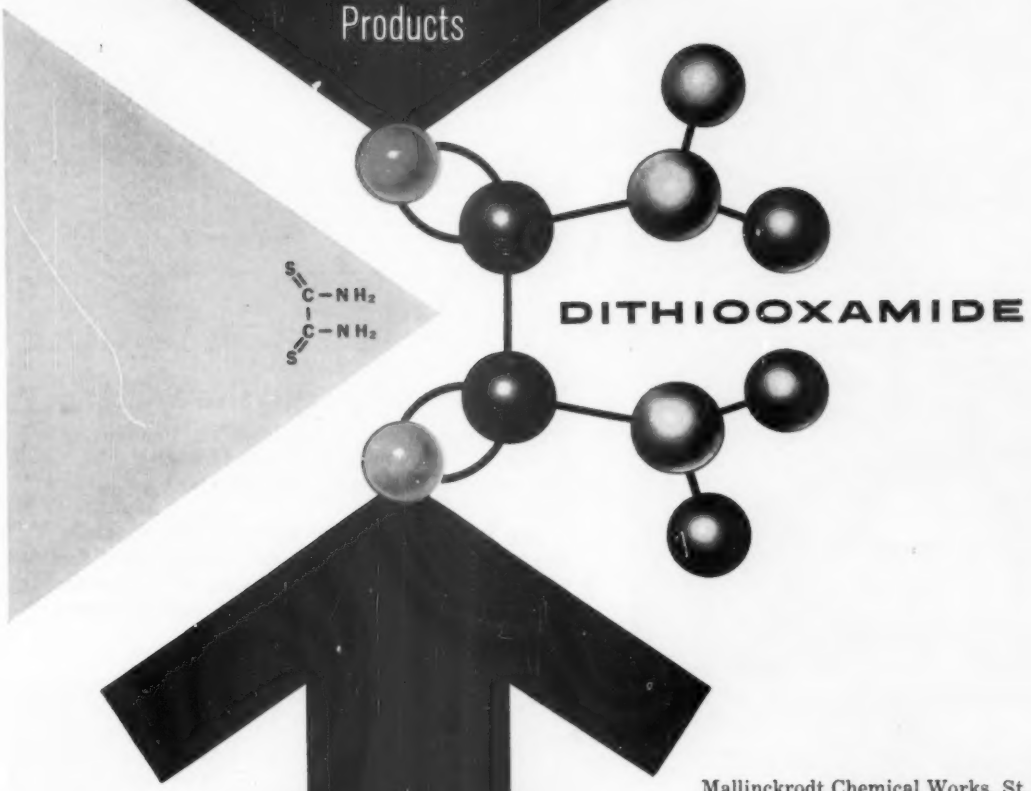

DITHIOOXAMIDE

Mallinckrodt Chemical Works, St. Louis, Missouri, recently announced this new building block...a chemical that can go in many directions to create new and better products. For example, the manufacturer suggests applications for dithiooxamide and its derivatives in the fields of metal sequestrants, pigments, organic intermediates and plant growth regulators.

A new building block with many potentials ...and as with so many such chemicals, Sulphur is a key ingredient!

Our business is to produce Sulphur ...to keep adequate supplies on hand at our production units...to deliver it in solid form by rail, barge or ship; in molten form in trucks, tank cars, barges, or ships. All of the properties listed below can supply both solid and molten Sulphur.

TEXAS GULF SULPHUR COMPANY

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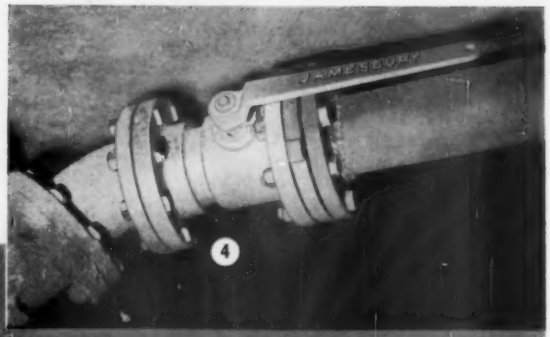
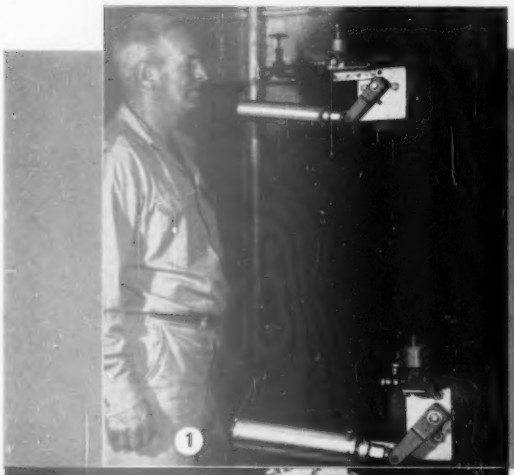
Sulphur Producing Units: Newgulf, Texas • Spindletop, Texas • Moss Bluff, Texas • Fannett, Texas • Worland, Wyoming • Okotoks, Alberta, Canada

jamesbury "Double-Seal"™ BALL VALVES

At Work in Pulp and Paper Mills

DEPENDABLE • VERSATILE



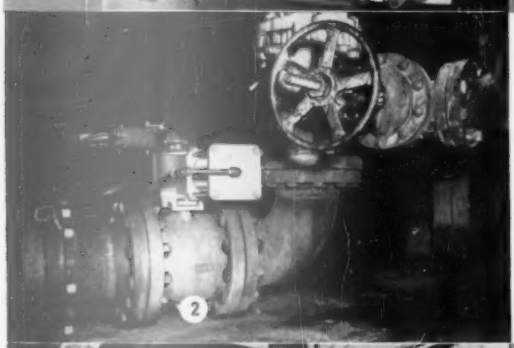


1 MINNESOTA & ONTARIO PAPER COMPANY
One of six 4" Jamesbury Ball Valves, with Remote Operator and 4-way solenoid valves, controlling flush-back to filter beds in H_2O precipitator at Minnesota and Ontario Paper Co., International Falls, Minn.

2 BRUNSWICK PULP AND PAPER CO.
View of 8" Type 316 Stainless Steel Ball Valves used on Digester Blow Service at Brunswick Pulp and Paper Co., Brunswick, Georgia.

3 CROWN ZELLERBACH CANADA
A Jamesbury 6" Type 316 Stainless Steel Ball Valve with TEFLON seats and seals and P-100 Operator in service handling Black and White Liquor Lines at Crown Zellerbach Canada, Ltd., Elk Falls Co., Ltd., division.

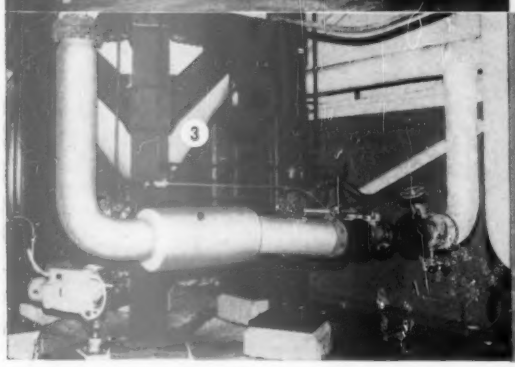
4 SIMPSON LEE PAPER COMPANY
A typical installation of Jamesbury 4" PVC Ball Valves as used at the Simpson Lee Paper Company, Evnrett, Washington, for their Bleach Lines.



The Jamesbury Ball Valve Principle

The Jamesbury Ball Valve controls the flow of media by means of a round port through the ball. The valve is fully opened or closed with a quarter turn.

The Ball is preloaded between two specially designed seats which are self-compensating for temperature, pressure and wear. This feature assures zero leakage throughout tens of thousands of cycles.



SERVICES

Spent Acid Lines • Sodium Dioxide • Calcium Hypochlorite CO_2 • Sampling Lines • Stock Lines • Bleach Lines • Liquor Lines • H_2SO_4 • Black Liquor Recovery Service • Kraft Mill Digester Service • Chlorinated Stock Service • Brown Water SO_2 Service • Instrumentation Lines • White Water • Water & Pulp Grinder • Water in Filtration Plant • Digester Gas-Off Digester Blow Service • Vacuum Service • Power Boiler • Gas Service • General Caustic Service • Alum Lines • White Liquor Fill Vortrap Drain • General Air Service • Kaolin Clay Service Paper Filler Service • Glue & Paste Service • Pilot Laboratory Demineralizer • Coating • Color Rooms • Paper Machine Showers • Hydrogen Peroxide • Rapid Cycle Digester Service Hydrogen Gas Service • Boiler Water Treatment System • Ash Elimination • Dry Chlorine Service • Starch System.

For details on types, sizes, materials, etc., ask for our new brochure entitled "The Jamesbury Ball Valve in Pulp and Paper Mills."

JAMESBURY CORP., 148 New Street, Worcester, Mass.

Distributors in Principal Cities

573-9

PHOTO BY EWING GALLOWAY, N. Y.

HAM FELTZ says:

"Reminds me of HAMILTON Felts ... you can depend on them, too!"

"Once we design a Hamilton Felt
best suited to *your* needs,
every Hamilton Felt you re-order
is — like Old Faithful's hourly show —
exactly like the last one
— uniform in style and porosity!
And, since 1858, paper makers have found
that Hamilton Felts give longest
high quality performance between changeovers."

Why trust to luck? Why not
depend on Hamilton Felts every time?
Write, without obligation, today!

YOU CAN'T BEAT
Hamilton
FELTS

SHULER & BENNINGHOFEN, HAMILTON, OHIO

PAPER DIVISION

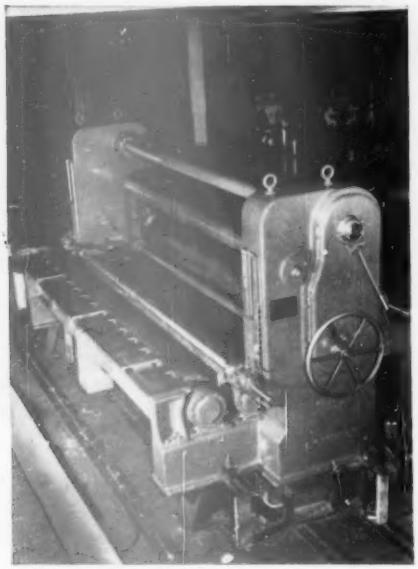
DOMINION ENGINEERING

COMPANY LIMITED

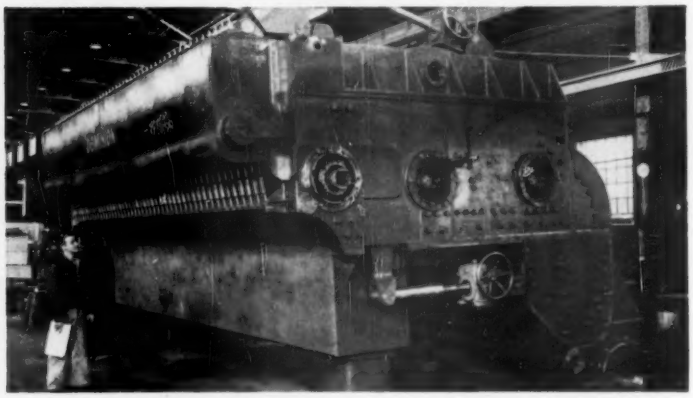
Head Office & Works: LACHINE, QUE., CANADA—P.O. BOX 220, MONTREAL, QUE. Branch Offices: TORONTO • WINNIPEG • VANCOUVER

PULP AND PAPER MAKING MACHINES AND COMPONENTS OF ALL TYPES

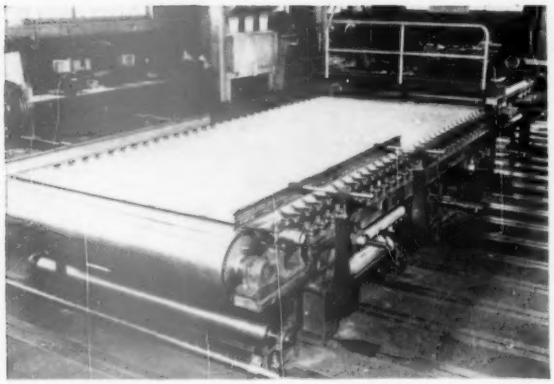
Dominion Engineering designs and builds complete paper, pulp, board and specialty machines of all types, and components particularly suited for modernization and modification of existing machines, including Pressure Head Boxes—Fourdriniers—Couch and Press Sections—Suction Rolls—Dryers—Calenders—Reels—Winders and Rewinders—Mechanical Drives—Pulp Grinders—Electric Steam Generators.



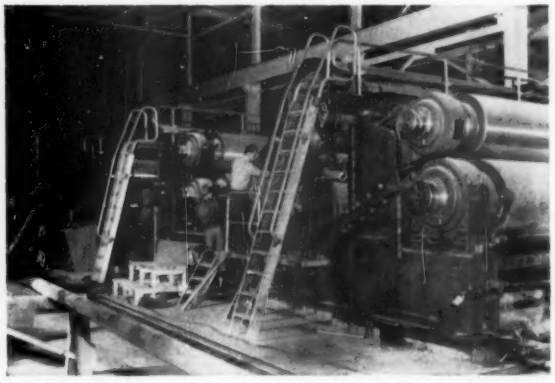
DOMINION WINDERS AND REWINDERS cover the full range from small low speed rewinders to the highest speed news machine winders. Designed to ensure maximum stability under all operating conditions, they incorporate automatic riding roll load control, readily adjustable slitters of either the shear cut or score cut type, a variety of paper unloading arrangements and special winder drum fluting to reduce noise.



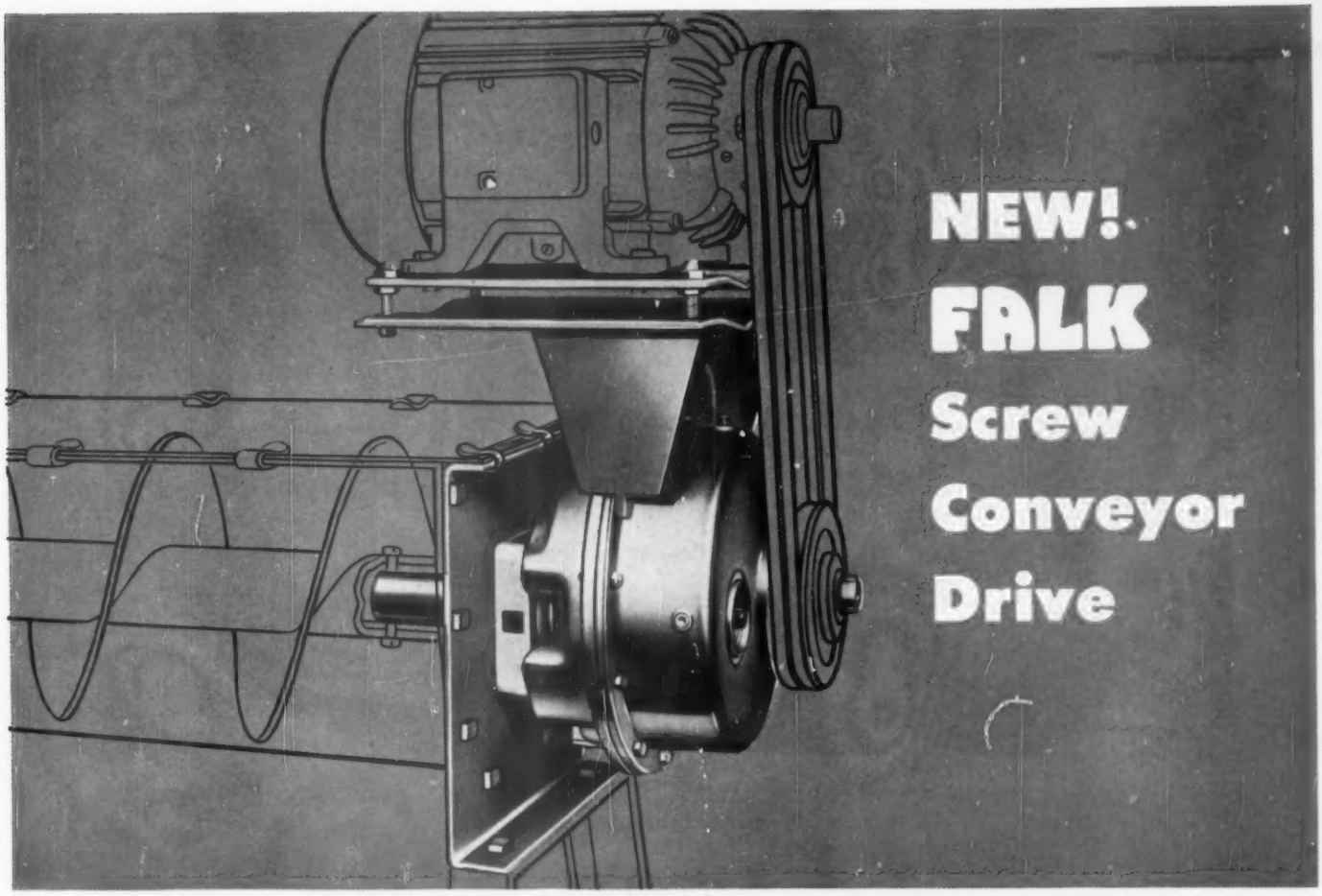
DOMINION PRESSURE HEADBOXES incorporate such advanced design features as: fully adjustable slice; parabolic cross-flow distributors and hydraulic rectifier roll drives. Dominion Pressure Headboxes are installed on many fine paper and newsprint machines to increase production and improve product quality.



DOMINION FOURDRINIERS are designed and built to mill requirements: fixed or removable, shaking, which incorporate the patented Torsion Bar Suspension, or non-shaking, etc. Dominion Fourdriniers reduce wire changing time. Most important, complete designing and manufacturing control by Dominion Engineering means total responsibility and service to users of Dominion equipment.



DOMINION SUCTION ROLLS benefit from many years of experience and development and incorporate such features as open ended design for accessibility combined with anti-friction bearings, floating suction box tops and drilling patterns designed to reduce noise level and shadow marking. The shells can be provided in all sizes in bronze or forged stainless steel, the latter permitting the high line pressures available from Dominion oil-hydraulic loaded press sections.



U.S. and Foreign Patents Applied For

—the drive our customers asked for

Our customers helped us design this new unit. We sent our men into the field to find out what our customers needed in a screw conveyor drive—then our engineers designed a new drive that offers the maximum of service, versatility, operating economy and long life. Here are some of its outstanding features:

A COMPLETE DRIVE: Saves engineering and assembly time. Six sizes to cover entire range—each with these ratios: — 4:1, 9:1, 14:1 and 24:1. Bolts to any standard trough end—eliminates trough end bearing. Eliminates drive shaft wobble. Efficient FALK single helical gears.

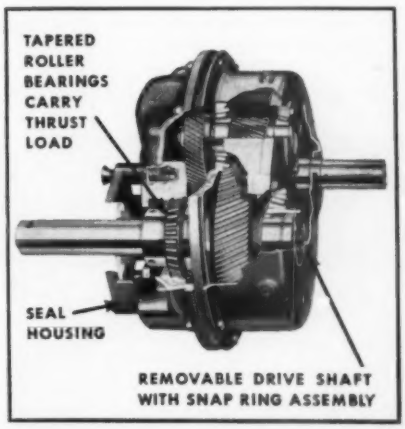
SEAL HOUSINGS: Choice of seals (neoprene or leather lip, felt or waste) to accommodate material conveyed. Space between trough seal and unit seal prevents conveyed material from reaching unit seal.

REMOVABLE DRIVE SHAFT: Snap ring assembly permits easy removal. Five sizes, from 1½" to 3⅞".

TROUGH END: Can be fastened to any standard trough. Eight sizes, from 6" to 20".

ALL-STEEL MOTOR MOUNT: Saves costly engineering and installation time and costs; no motor plates to design or fabricate. Motor can be mounted in virtually any position. Pre-drilled to accommodate NEMA standard motors ½ to 30 HP.

AN IMPORTANT ECONOMY: Buy only what you need—the basic reducer alone, or with trough end and/or motor mount. For detailed information, contact your Falk Representative or Distributor—or ***write direct for Bulletin 7106.***



THE FALK CORPORATION, MILWAUKEE 1, WISCONSIN

MANUFACTURERS OF QUALITY GEAR DRIVES AND FLEXIBLE SHAFT COUPLINGS

Representatives and Distributors in most principal cities

FALK is a registered trademark

FALK

...a good name in industry

GASPESIA NOW HAS CHLORINE DIOXIDE PULP!

Don't commit yourself on future orders for sulphite pulp until you've tried the *new* Gaspesia Chlorine Dioxide pulp.

This high-quality new ClO_2 pulp is now being produced in a bleach plant only six years in operation. Space was left for this Chlorine Dioxide operation in the original plant plans. Now, Gaspesia is the only North American sulphite pulp made from northeastern woods bleached in a completely modern bleach plant, utilizing chlorine dioxide.

Gaspesia pulps have long been known for their excellent cleanliness, strength and good forming qualities. Now chlorine dioxide makes possible a brightness of 91 G.E.

Orders for trial cars are now being accepted. We suggest you order your initial shipment today to assure a steady supply in the years ahead.

GASPESIA SULPHITE COMPANY LTD.
CHANDLER, QUEBEC, CANADA

SOLD BY: **Anglo Paper Products, Ltd.**
2055 Peel Street, Montreal 2, Quebec

SALES REPRESENTATIVES IN THE UNITED STATES:
Northeastern Paper Sales, Inc.
400 Madison Avenue, New York 17, N.Y.
20 North Wacker Drive, Chicago 6, Ill.

Which of these 3 products and services can you use from BECCO?

New Cold Caustic Bleach Process

Looking for a way to use greater amounts of low-cost, more plentiful pulp—without capital investment for bleach equipment? Then let a Becco Sales Engineer show you our new technique* which allows you to bleach in the same equipment regularly used for the manufacture of cold caustic pulp.

In this new process, peroxide bleach liquor is added at the Bauer Refiner, and bleaching occurs during the refining operation. Bleach response depends on refiner densities.

Up to 20 points brightness increase has been obtained in commercial operations to date, and with no additional steam costs, no holding time, and no excessive chemical costs.

Becco can assist you immediately in setting up a production run and evaluating results. First step: use the coupon to let us know you're interested.

BECCO fmc

BECCO CHEMICAL DIVISION, FMC
Station B, Buffalo, New York
Dept. PP-H

Gentlemen:
Please have a Sales Engineer give me more information on Becco's Cold Caustic Bleach Process.

NAME_____
FIRM_____
ADDRESS_____
CITY_____
ZONE_____ STATE_____

Need a Bleach Plant in a hurry?

By now, you've probably heard about Becco's Dryer Steep Bleaching Process for insuring brightness permanence by spraying Hydrogen Peroxide across the pulp sheet ahead of the dryers. And you probably know that although the process is patented, Becco will grant a perpetual license for just $1.00.

But there may still be a question in your mind as to how you can prove this out in your own mill—how you can set up a bleach plant in a hurry.

Becco has the answer to this, too. We'll be glad to provide you with a complete "bleach-plant kit"—for as long as you need it—consisting of all the equipment needed to make up peroxide bleach liquor and spray your production sheet.

Here's an opportunity for you to prove to yourself, quickly and easily, that this Becco process will maintain your layboy brightness level — even **improve** it — through shipping and delivery.

If you'd like to take us up on this offer, drop us a line, or mail the coupon below. And of course, even after we demonstrate, you incur no obligation.

BECCO fmc

BECCO CHEMICAL DIVISION, FMC
Station B, Buffalo 7, New York
Dept. PP-J

Gentlemen:
Yes! We need a "bleach plant in a hurry". Please send us more information about Dryer Steep Bleaching.

NAME_____
FIRM_____
ADDRESS_____
CITY_____
ZONE_____ STATE_____

TECHNICAL BULLETINS

We got 'em—
You can have 'em!
They're FREE!

Years of experience in paper and pulp processing have produced a library of technical information which is available in individual bulletins, free on request. Use the coupon below to let us know which you'd like to receive.

- **No. 31 — Groundwood Bleaching Variables — A Statistical Approach.**
- **No. 32 — H_2O_2 Bleaching of Chemicals and Mechanical Pulps.**
- **No. 47 — Peroxide Bleaching of Pulps.**
- **No. 48 — High-Density Pulp Bleaching.**
- **No. 64 — Development Studies on Last-Stage H_2O_2 Bleaching of Alkaline Pulps.**
- **No. 65 — Peroxide Bleaching of Southern Pulps.**
- **No. 66 — Becco Laboratory Procedures for Pulp Bleaching, 1955 Ed.**
- **No. 91 — Peroxide Bleaching of Chemi-Mechanical Hardwood Pulps.**
- **No. 92 — Peroxide Bleaching of Chemical Pulps.**

BECCO fmc

BECCO CHEMICAL DIVISION, FMC
Station B, Buffalo, New York
Dept. PP-G

Gentlemen:
Please send me a copy of each of the following bulletins:

— — — — — — — —

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FIRM_____
ADDRESS_____
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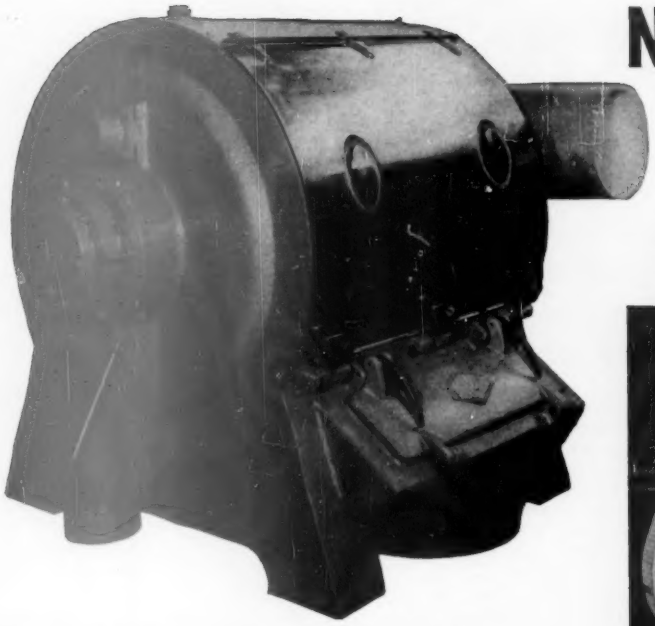
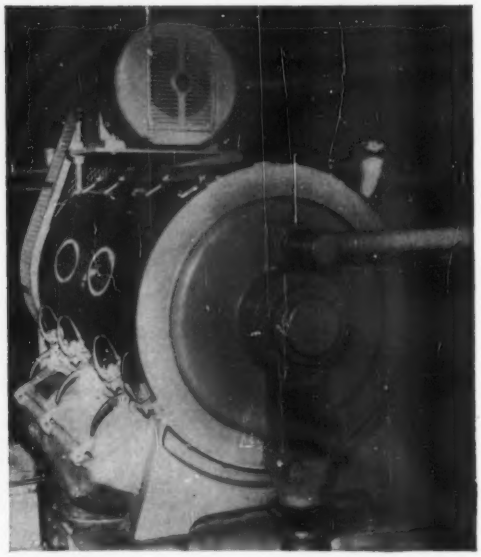
ZONE_____ STATE_____



NEW ADVANCES IN LOW COST QUALITY PULP SCREENING

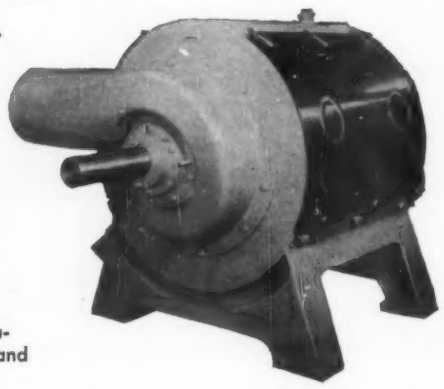


IMPCO CENTRIFUGAL SCREENS FOR:

Washed Stock Screening
Hot Stock Screening
Sealed Black Liquor Knotting
Fibre Length Classification
Paper Stock Cleaning

The new Impco Centrifugal Pulp Screen is the latest example of the progress made toward the ultimate in low cost quality screening. This screen incorporates many improved principles and features such as:

- — a stock inlet allowing direct top, bottom, front or rear infeeding which simplifies installation piping;
- — a tangential inlet which changes flow direction from linear to rotating, yet retains velocity head;
- — a special stator which provides uniform internal distribution of pulp;
- — a patented high-efficiency rotor which increases capacity without additional horsepower;*
- — a bottom accepted stock outlet permitting all sub-floor piping;
- — a full length quick-opening door for routine accepted stock sampling;
- — an accessible rejects outlet for tailings inspection or sampling.



These features are resulting in peak capacities and high discharge consistencies at lowest horsepowers. Reject richness is readily controlled. Engineered simplicity is characteristic of the entire line of Impco Centrifugal Screens which require very little operating attention and mechanical maintenance.

* U. S. Patent No. 2,845,848.

IMPROVED MACHINERY INC.
NASHUA, NEW HAMPSHIRE

IMPCO®

In Canada, Sherbrooke Machineries Ltd., Sherbrooke, Quebec

5 INSTANCES WHERE PAPERS DO A BETTER JOB BECAUSE THEY'RE SIZED WITH CYRON®

CHEMICAL SIZE

TABLET PAPERS
—because CYRON's high ink resistance prevents feathering.

PRINTING PAPERS
—because a comparatively small amount of CYRON size gets more mileage from the inks and because CYRON helps produce a better gloss.

MINERAL FIBERS
—because CYRON provides alkaline resistance and high water resistance.

DISPLAY CARTONS
—because CYRON sized paperboard takes ink better.

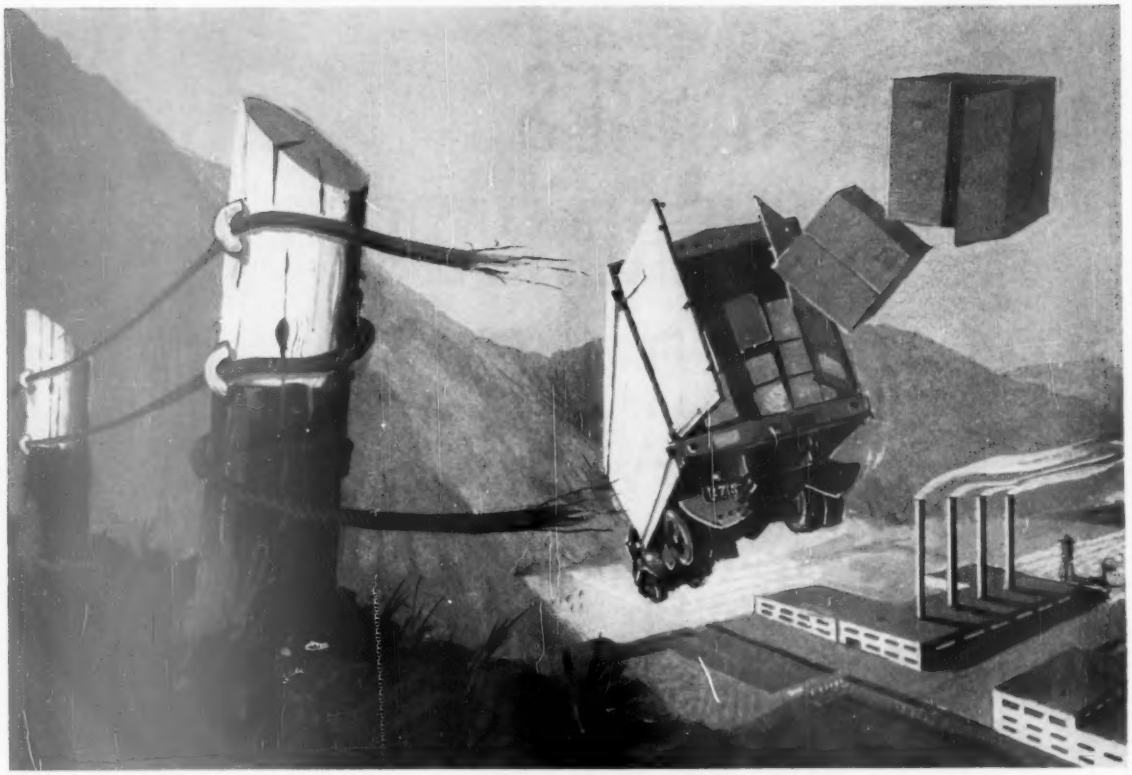
PACKAGING FOR SOAPS AND OTHER ALKALIS
—because CYRON provides resistance to *alkalis*, as well as acids.

For use in the beater, *on the surface*, or both. No rosin, alum or wax required when you use CYRON. Available in easy-to-dissolve flake form—shipped in 50 lb. multiwalls. For complete technical information write for free booklet, CYRON SIZE.

CYANAMID

AMERICAN CYANAMID COMPANY PAPER CHEMICALS DEPARTMENT
30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

In Canada: Cyanamid of Canada Limited, Montreal and Toronto



HOW A HIGHWAY ACCIDENT CLEANED A STOCK PREPARATION SYSTEM!

Skidding across the highway, a giant trailer truck crashed through the guard rail of a New England turnpike, spilling thousands of gallons of LESTOIL Liquid Detergent down the mountainside. The driver escaped with only minor cuts and bruises, but the LESTOIL found its way into the water supply of a nearby paper mill.

Unknown to the mill production staff, the LESTOIL "solution" flowed through intake pipes, and thence through the entire stock preparation system.

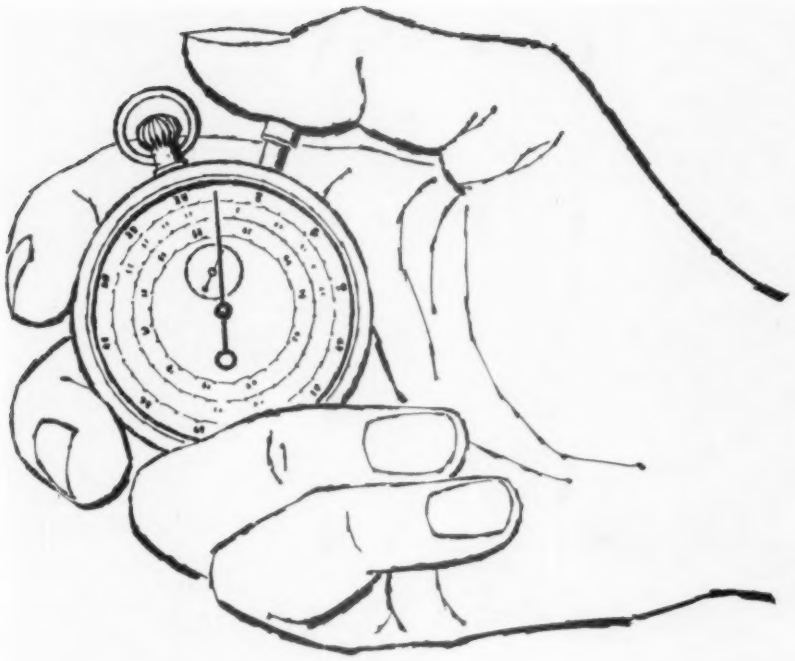
THE RESULT: scale, slime, mineral salts and dirt which had accumulated in the pipes — emulsified by the LESTOIL — flowed out of the head boxes onto the paper machine. This unscheduled cleaning naturally curtailed production, but the plant superintendent was really impressed with the thorough cleaning job done by LESTOIL.

We don't recommend such drastic treatment to test d-i LESTOIL (our special paper mill formula). But, used periodically as a system cleaner, d-i LESTOIL does the job quickly and efficiently. And used regularly in your pulping or rag cooking processes, d-i LESTOIL will not only de-ink, de-wax and de-grease your raw stock, but will also prevent soil deposits from forming in your system and help you maintain top production.

d-i LESTOIL LIQUID DETERGENT

For a generous, free sample and detailed information, write to:

LESTOIL, INC. 121 Garfield Street HOLYOKE, MASS.
a subsidiary of Adell Chemical Co.



Time impregnation with a stopwatch?

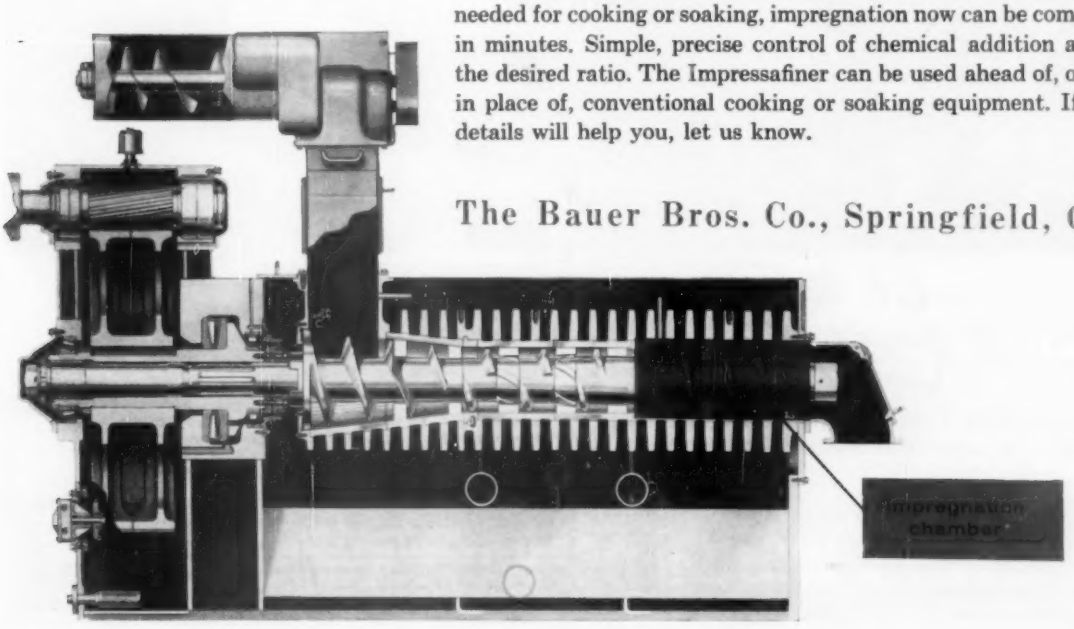
Here's the newest concept in continuous pressurized impregnation

Bauer
NO. 567
IMPRESSAFINER
(Patents and trademark registrations applied for.)

Are you interested in thorough, uniform impregnation of chips . . . at a fraction of the time usually required? It's now possible, with Bauer's new No. 567 Impressafiner. Based on basic Bauer patents for high pressure screw press equipment, the Impressafiner puts newly applied engineering principles to work for you.

In certain processes, where an hour or more was normally needed for cooking or soaking, impregnation now can be completed in minutes. Simple, precise control of chemical addition assures the desired ratio. The Impressafiner can be used ahead of, or even in place of, conventional cooking or soaking equipment. If more details will help you, let us know.

The Bauer Bros. Co., Springfield, Ohio



what have we done for you lately?

WHEN YOU HAVE A PROBLEM WITH PULP CHEMICALS, WE CAN HELP. WITH SAFETY PROGRAMS, FOR EXAMPLE.

We can instruct your personnel in accepted methods for handling such chemicals as caustic soda, chlorine, sodium chlorate, chlorine dioxide, etc. We can also offer safety lectures, along with suggestions for planning emergency programs for your mill. We also provide many pieces of literature on the subject. Just ask.

These wall charts on chlorine and sodium chlorate are examples of our safety program aids. Charts can be posted at or near the point of use. They list precautions to be observed in handling chlorine in all types of containers and sodium chlorate in tank cars. Write for your copies.

HOOKER CHEMICAL CORPORATION
1901 Forty-seventh Street, Niagara Falls, New York

HOOKER
CHEMICALS
PLASTICS

Sales offices: Buffalo Chicago Detroit
Los Angeles New York Niagara Falls
Philadelphia Tacoma Worcester, Mass.
In Canada: Hooker Chemicals Limited, North Vancouver, B.C.

HOW YARWAY BLOW-VALVES REDUCE DIGESTER OPERATING COSTS

Faster blow

Valve by valve comparisons show Yarway Seatless have up to 100% greater discharge area than some other digester blow valves of the same nominal pipe size. Result—faster discharge, lower pressure drop.

Cleaner blow

Steam purging is unnecessary since Yarway's seatless hollow-sliding-plunger design eliminates all pockets where wood chips or tramp metal can hang up.

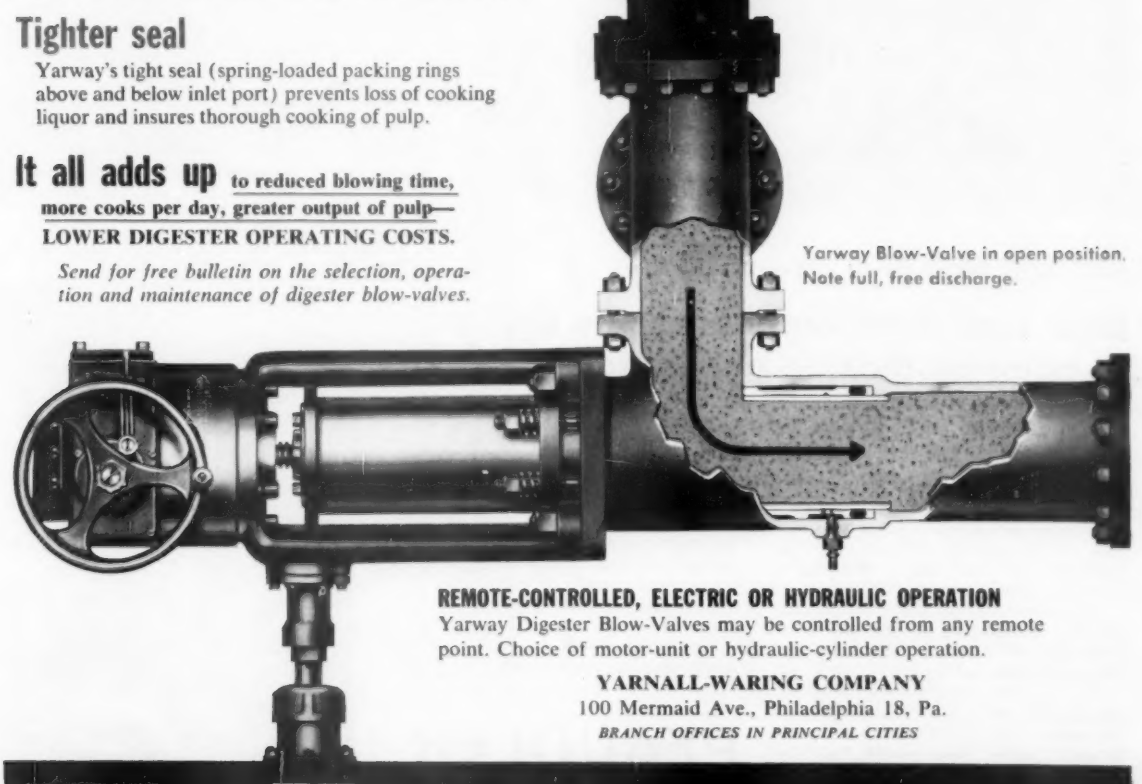
Tighter seal

Yarway's tight seal (spring-loaded packing rings above and below inlet port) prevents loss of cooking liquor and insures thorough cooking of pulp.

It all adds up

to reduced blowing time, more cooks per day, greater output of pulp—
LOWER DIGESTER OPERATING COSTS.

Send for free bulletin on the selection, operation and maintenance of digester blow-valves.



Yarway Blow-Valve in open position. Note full, free discharge.

REMOTE-CONTROLLED, ELECTRIC OR HYDRAULIC OPERATION
Yarway Digester Blow-Valves may be controlled from any remote point. Choice of motor-unit or hydraulic-cylinder operation.

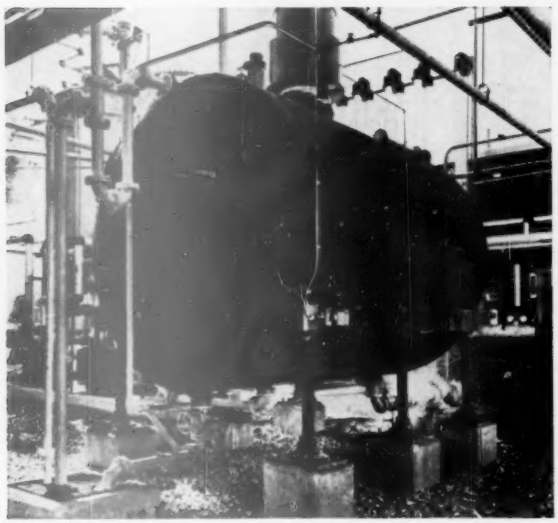
YARNALL-WARING COMPANY
100 Mermaid Ave., Philadelphia 18, Pa.
BRANCH OFFICES IN PRINCIPAL CITIES

YARWAY DIGESTER BLOW-VALVES

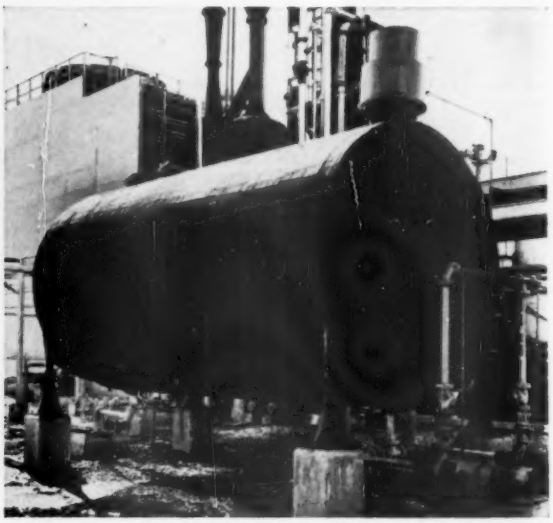
FLUIDICS

is a new PFAUDLER PERMUTIT program that provides a modern, imaginative approach for handling and processing more profitably the liquids and gases involved in such operations as:

corrosioneering	flow rate control	pumping	metering
water treatment	heat transfer	reactions	valving
waste treatment	fluid analysis	agitation	piping
		blending	storing



Waste liquors, highly corrosive, are accumulated in Glasteel at Marathon Southern in this 5000-gallon Glasteel Chemstor tank.



15,000-gallon storage tank of Glasteel construction keeps chlorine dioxide safe and pure until it's ready for use.

FLUIDICS AT WORK

How Marathon Southern uses Glasteel in chlorine dioxide generation

One of the major factors to consider in setting up a chlorine dioxide plant is the corrosiveness of chlorine dioxide itself and of the chemicals used to generate it.

Depending on the process you use, you run up against sodium chlorate, sulfuric acid, methanol, and sulfur dioxide.

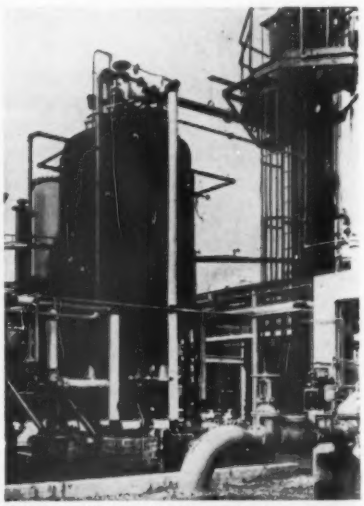
One construction material is completely resistant to all and any combination of these chemicals . . . Pfaudler Glasteel.

That's why you'll find Glasteel equipment so much in evidence at Marathon Southern's new chlorine dioxide plant. This single material from one fabricator solves *all* the corrosion problems encountered.

More than 35 pulp mills are now using Glasteel equipment for everything from generators to storage tanks and towers, from pumps and pipes to fittings and valves.

If you're considering a new chlorine dioxide plant or expanding or revamping an old one, take advantage of Glasteel, the modern material of construction for ClO_2 equipment, provided by our FLUIDICS program. You can get a complete analysis covering original prices, maintenance costs, and length of equipment life simply by contacting your Pfaudler representative.

Or write direct to our Pfaudler Division, Department PP-10, Rochester 3, New York.

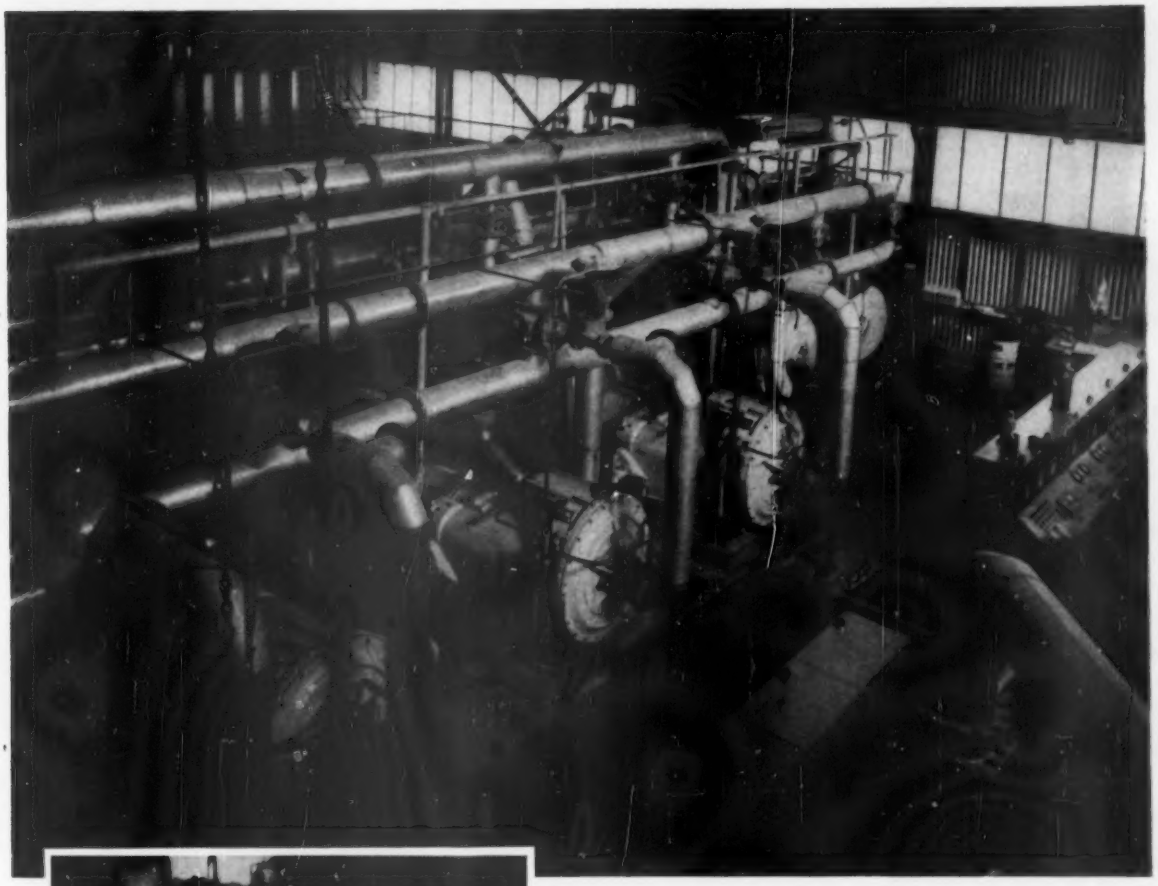


Primary chlorine dioxide generator at Marathon Southern. Five-ton-per-day capacity. Like most of the chlorine dioxide equipment at this installation, it's corrosion resistant Glasteel.

PFAUDLER PERMUTIT INC.

Specialists in FLUIDICS . . . the science of fluid processes

23 YEAR DISC LIFE INDICATED



After two years of tough work Jones Double-D Super-Stainless discs show only .065" wear — evenly distributed and with parallelism perfectly retained.

for Jones Double-D's on the Seminole Chief

Sept. 7, 1957 was the day St. Regis began to produce their fine quality Seminole Chief Board in Jacksonville — with the help of ten Jones Double-D's for both primary and secondary refining. Regular six month checks of the Jones Super Stainless discs in each Double-D show a maximum wear of only .0027" per month. Applied against the available disc wear of .750", this actually indicates a disc life of more than 23 years!

This fine record has been made, too, under heavy power requirements — normally more than 600 HP and sometimes running as high as 1000 HP on each primary refiner for periods of several weeks!

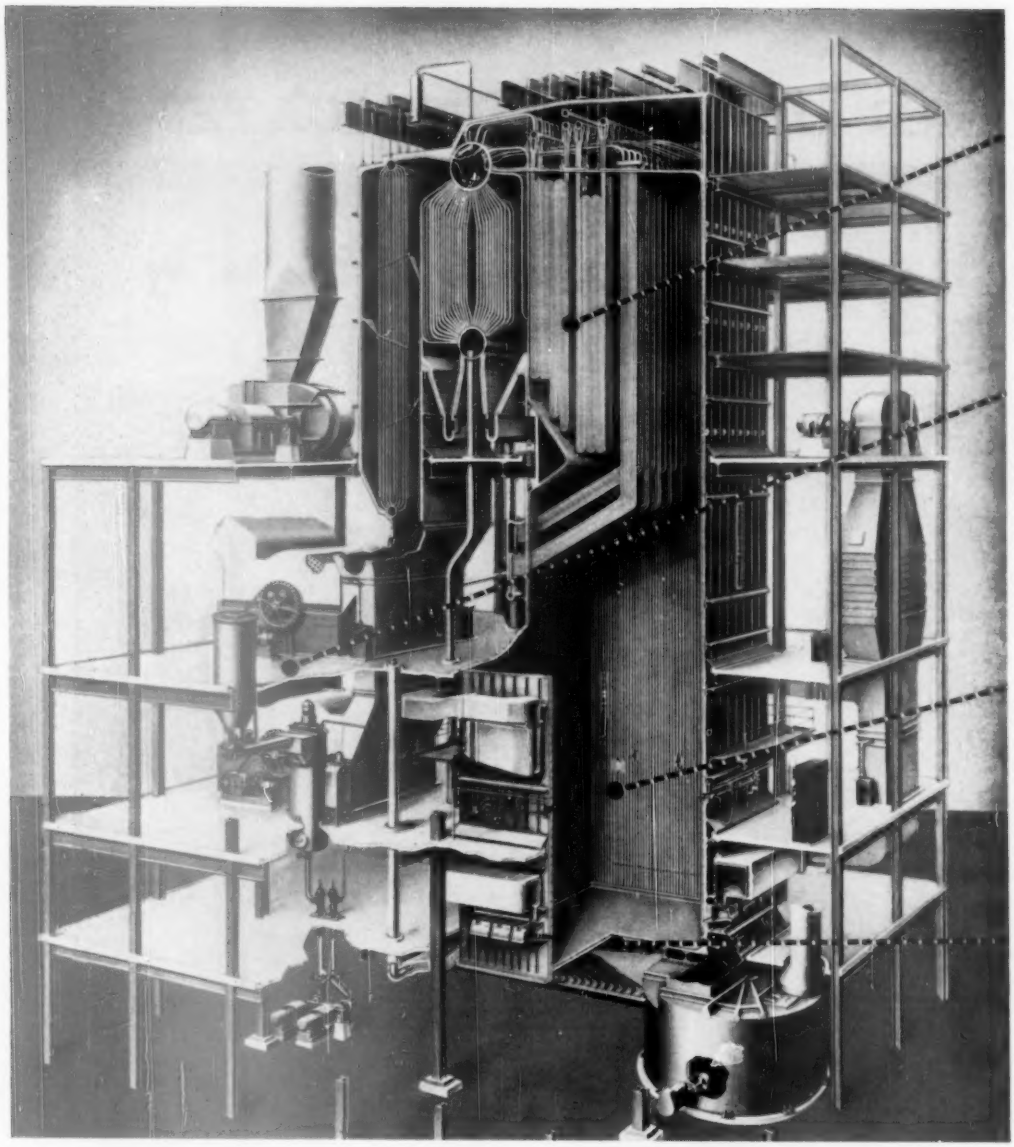
Have a tough refining problem? Better look into the Jones Double-D. Write to E. D. Jones Corporation, Pittsfield, Mass., for bulletin EDJ1083.

E. D. JONES CORP. member BELOIT group PITTSFIELD, MASS.

Jones

PULP MILL EQUIPMENT AND STOCK PREPARATION MACHINERY

Represented in Canada by
The Alexander Fleck Ltd.
75 Spencer Street, Ottawa



1. PANEL CONSTRUCTION

The widely spaced self-cleaning panel type superheater and screen — developed by C-E — provides no foothold for slag. Gas passage is smooth and unimpeded. Slag build-up is minimized, gas flow and heat absorption is uniform across the width of the furnace, surfaces are cleaner and soot blower action is more effective.

2. CONTROL

Furnace stability is assured because evaporative heat is controllable to compensate for density differences in incoming liquor, regardless of limited multiple-effect evaporator capacity. Liquor temperature is controlled accurately and automatically, and fuel-air ratios are automatically proportioned to maintain the furnace atmosphere required for high reduction.

3. TANGENTIAL AIR

Secondary air is introduced tangentially above black liquor sprays. Fuel-air mixture is intimate and complete. Gas velocity upward through the sprays is decreased, ash entrainment in gases leaving furnace is reduced. Combustion is completed in lower part of furnace, furnace exit gas temperature is reduced.

4. DECANTING HEARTH

A layer of chilled smelt is held in contact with the water-cooled furnace floor. Molten smelt rides on top of the chilled layer and leaves the furnace without touching hearth refractory or floor tubes. The cost and inconvenience of downtime due to hearth failure is eliminated.

Why "C-E" Means Economy in Chemical Recovery Systems

Until 1954, 350 to 400 tons was considered the size limit for chemical recovery units. Technical obstacles prevented bigger, more economical installations. Then, in October, 1954, C-E began taking orders for 500-ton units and larger! C-E breakthroughs had overcome the industry's "capacity barrier".

By combining the above four developments, a baffleless boiler and modern retractable soot blowers, C-E produced the first unit capable of handling 2,000,000 pounds of dry solids in 24 hours. This and a dozen similar giants are far exceeding expectations, so great are their economies.

You can benefit from this extensive experience — by working with C-E on your chemical recovery problems. Call the C-E office nearest you, or contact the C-E Paper Mill Division in New York.

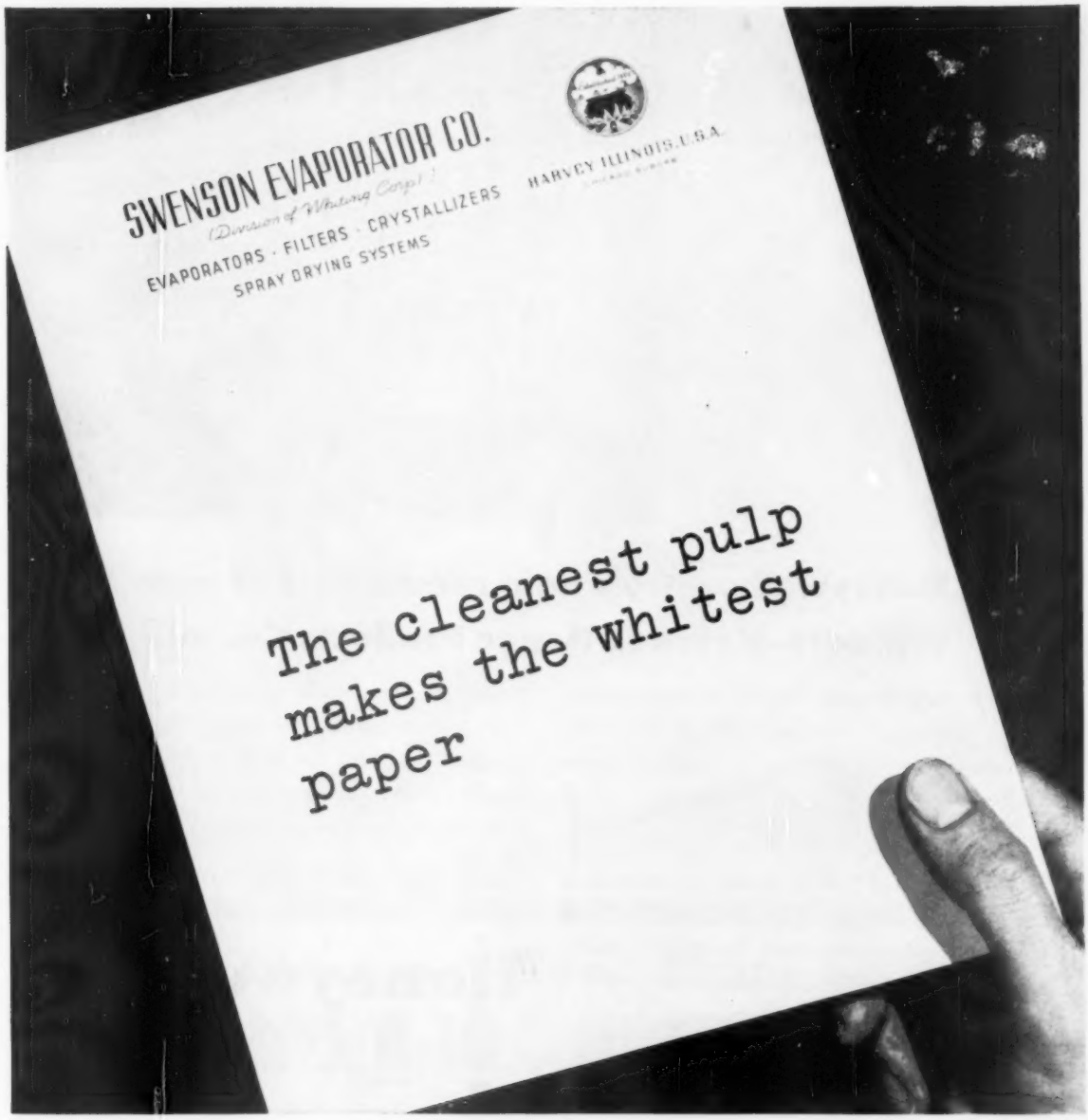
COMBUSTION ENGINEERING

Combustion Engineering Building • 200 Madison Avenue, New York 16, N. Y.

C-247

CANADA: Combustion Engineering-Superheater Ltd.

ALL TYPES OF STEAM GENERATING, FUEL BURNING AND RELATED EQUIPMENT; NUCLEAR REACTORS; PAPER MILL EQUIPMENT; PULVERIZERS; FLASH DRYING SYSTEMS; PRESSURE VESSELS; SOIL PIPE



Clean pulp is a basic requirement for economical bleached pulp and white paper production. Swenson pulp washers provide this clean pulp—and produce it with an extremely low dilution of the recovered black liquor. As a result, both bleaching costs and chemical recovery costs are held to a minimum. These operating advantages are backed by proven mechanical reliability and such features as self-aligning roller bearings and high strength deck construction. Specify Swenson pulp washing equipment.

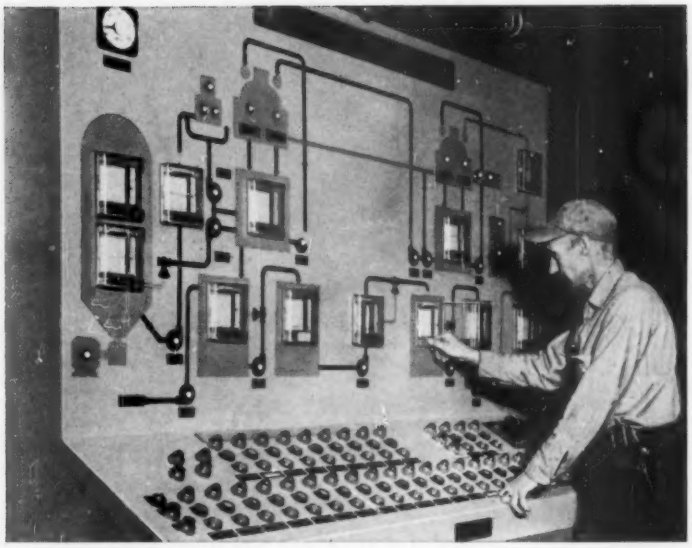
FREE BOOKLET . . . Provides new insight into pulp-washing efficiency. Write today for Bulletin SW 300! *Swenson Evaporator Company, 15632 Lathrop Avenue, Harvey, Illinois.*

PROVED ENGINEERING FOR THE PROCESS INDUSTRIES SINCE 1889

SWENSON

A Division of WHITING Corporation

WHITING—MANUFACTURERS OF CRANES; TRAMBEAM HANDLING SYSTEMS; TRACKMOBILES; FOUNDRY AND RAILROAD EQUIPMENT.



HONEYWELL GRAPHIC PANEL controls the Dorr-Oliver washing system. The new mill was built for $7,000,000.

Honeywell controls help reduce cost of new Waldorf-Hoerner Paper Products Co. mill

With closely-knit, complete mill instrumentation, this revolutionary new pulp mill at Missoula, Montana, produces 250 tons of bleachable-grade kraft pulp per day, with a surprisingly small work force.

The brain child of Nels H. Sandberg, president of the Montana company, the entire mill features many processing innovations for efficient, profitable operation through automatic control.

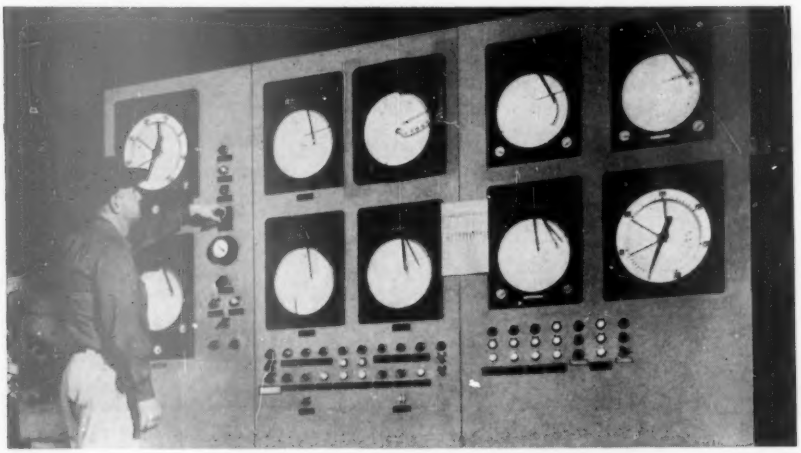
This is another example of how mill instrumentation, complete from concept to startup, pays daily dividends. Your nearby Honeywell field engineer can show you how to gain the advantages of instrumentation in your own mill. Call him today . . . he's as near as your phone.

MINNEAPOLIS-HONEYWELL, Wayne and Windrim Avenues, Philadelphia 44, Pa.

Honeywell

First in Control

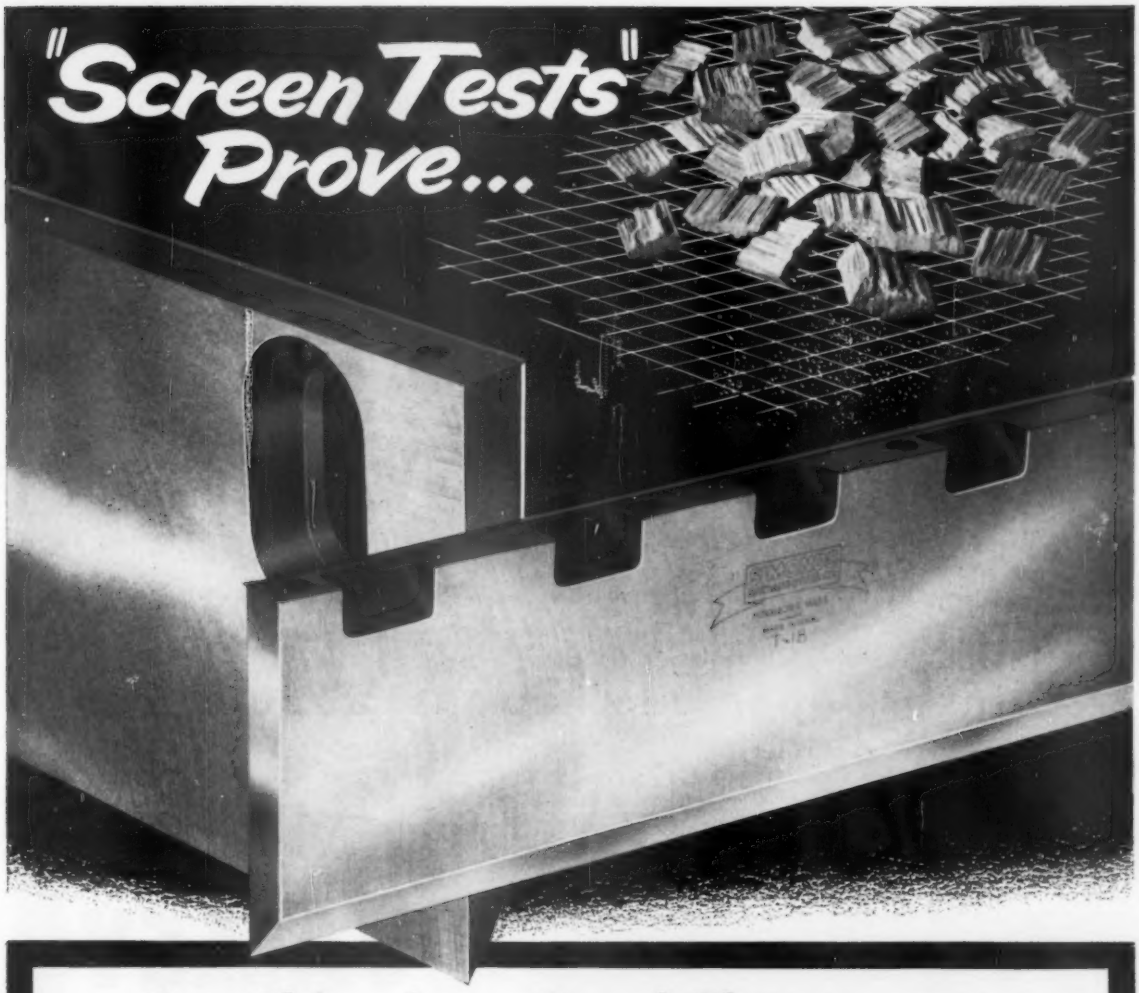
SINCE 1885



HONEYWELL RECORDERS AND CONTROLLERS operate the digesters. The mill plans to produce 500 tons of pulp a day in 1960.

75th YEAR

PIONEERING THE FUTURE



For Chips in Good Shape — use SIMONDS T-18 CHIPPER KNIVES

More usable chips with less dust through the screens means a lower percentage of waste, greater chip yield and more efficient woodroom operation.

You get this with Simonds T-18 Steel Knives because they are extra tough, take high speeds and heavy cuts, have extra resistance to dulling which causes bruised chips and excess dust.

Put Simonds T-18 Knives on the job and *your* screen tests will show more and better chips, less dust, LOWER COST CUTTING.

SIMONDS
SAW AND STEEL CO.
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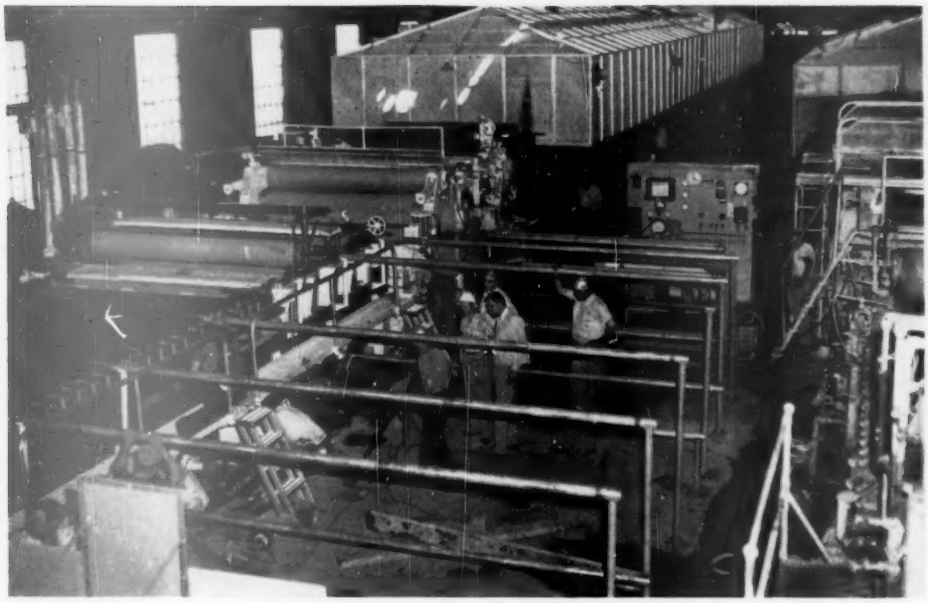
Factory Branches in Boston, Chicago, Shreveport, La., San Francisco and Portland, Oregon
Canadian Factory in Montreal, Que., Simonds Divisions: Simonds Steel Mill, Lockport, N. Y., Heller Tool Co., Newcomerstown, Ohio
Simonds Abrasive Co., Phila., Pa., and Arvida, Que., Canada

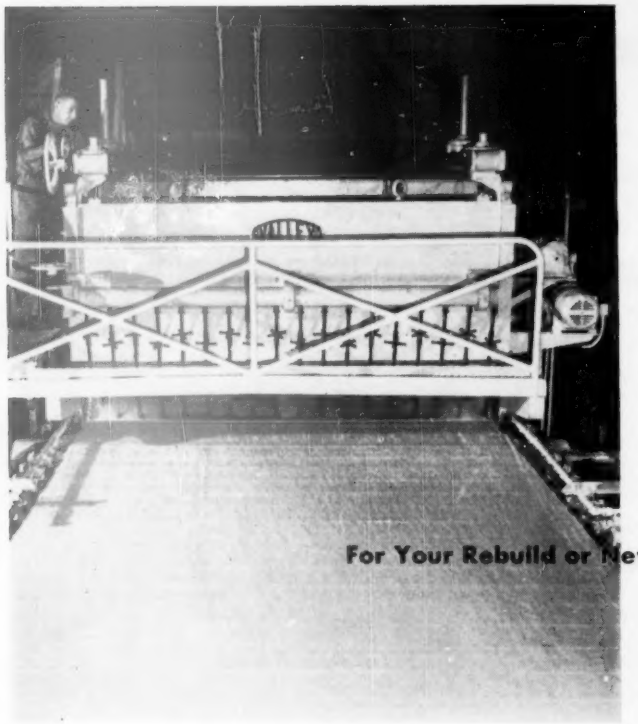


Finished Wet End With Wire Stringing Rig.

NO. 4 MACHINE AT MEAD CORP.
Kingsport, Tennessee

Another Paper Machine is Rebuilt by

VALLEY



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NEW Cantilever Fourdrinier
NEW Press Stands and Pneumatic Loading
NEW Smoothing Press

For Your Rebuild or New Machine Write —

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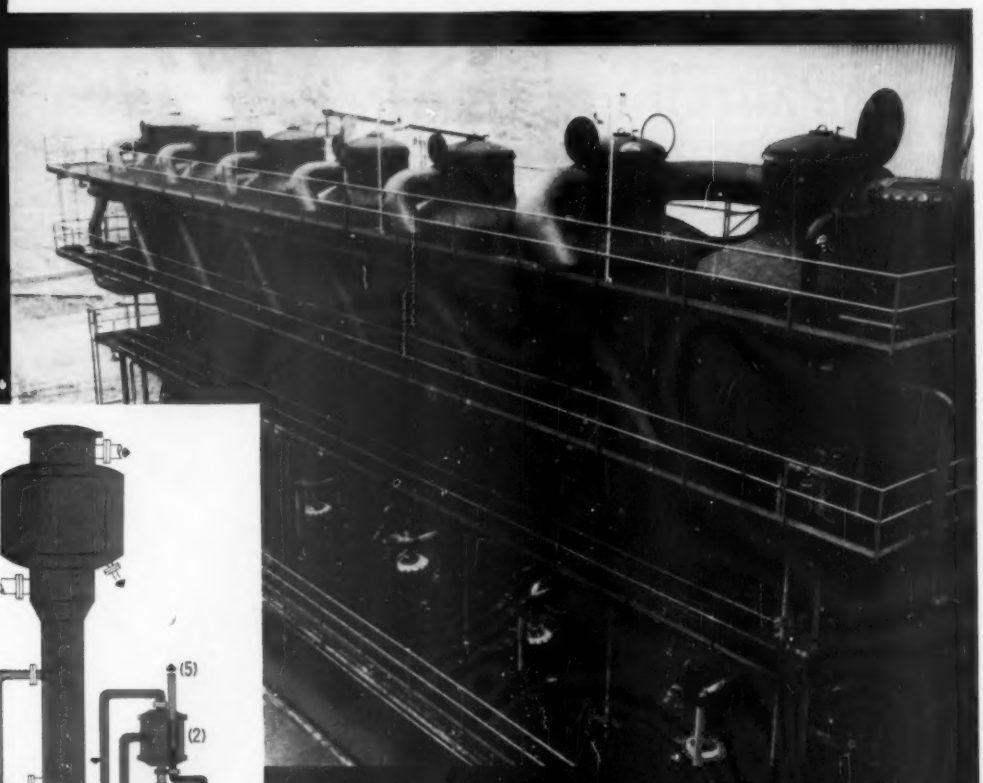
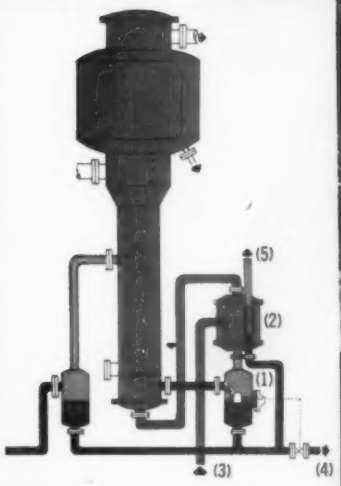
SUBSIDIARY OF ALLIS-CHALMERS MANUFACTURING COMPANY
APPLETON, WISCONSIN

ROSENBLAD EVAPORATORS

IN 17 COUNTRIES, THE STANDARD FOR EVAPORATOR PERFORMANCE





Condensate and excess vapor-carrying non-condensable gases from effect (above) are separated in condensate remover (1). Vapor and non-condensables flow through the Spiral Heat Exchanger (2) where black liquor (3) to the same effect is pre-heated. The cooled condensate is drained to the combined condensate line (4). The non-condensable gases are sub-cooled and vented through line (5).

Pat., U.S. & Can.

Rosenblad black liquor evaporators, with their effective venting-preheating system, have these important advantages: high heat transfer because of the efficient preheater design... and long, trouble-free life because of the quantity of vapor that is vented.

These advantages are made possible by the Rosenblad Spiral Heat Exchanger, whose exclusive design (two wrapped-up plates) eliminates plugging, maintains high efficiency, and provides optimum heat recovery. Over 50 world-wide installations attest the advantages of Rosenblad evaporators in operating economy and increasing plant capacity. Write for full information.

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Perhaps the skilled hand of Nopco can go to work for you. Back of every chemical made by Nopco for the paper industry stands Nopco Technical Service—an experienced staff ready to assist with laboratory data and recommendations based upon your specific requirements.

DEFOAMERS	FELT WASHING DETERGENTS
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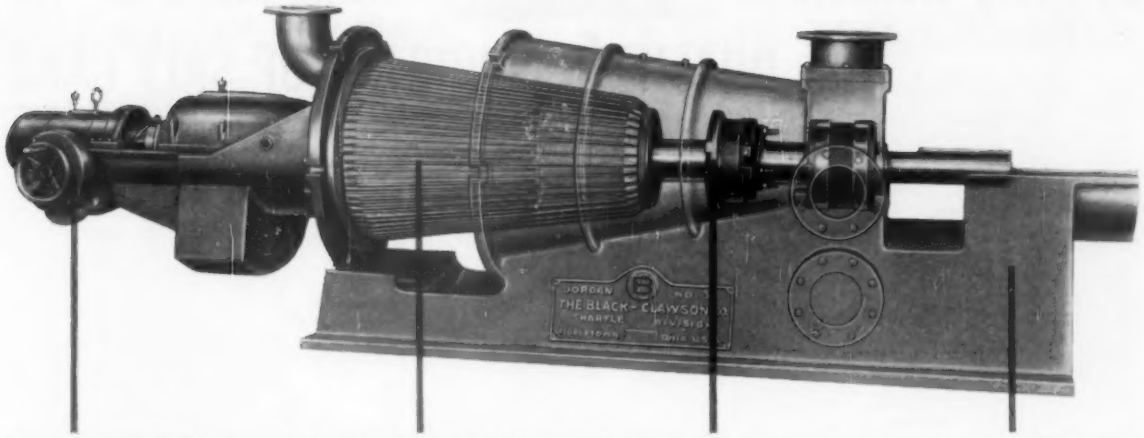
Plants: Harrison, N.J. • Richmond, Calif. • Cedartown, Ga. • London, Canada

How to Cut Costs of Labor, Maintenance and Downtime



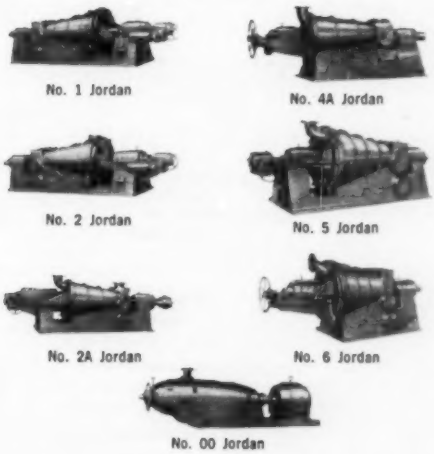
New, improved electrically operated Duotrol automatic plug adjuster provides sensitive control and uniform stock treatment.

Famous X-66 jordan plug for longest life.

Fast, easy plug removal. Head, plug, shaft bearings and packing boxes slide out as one unit.

Heavy, one piece cast construction, precision machining assures precision alignment, maximum strength and rigidity.

Standardize on Pressurized Jordans



No. 1 Jordan

No. 4A Jordan

No. 2 Jordan

No. 5 Jordan

No. 2A Jordan

No. 6 Jordan

No. 00 Jordan

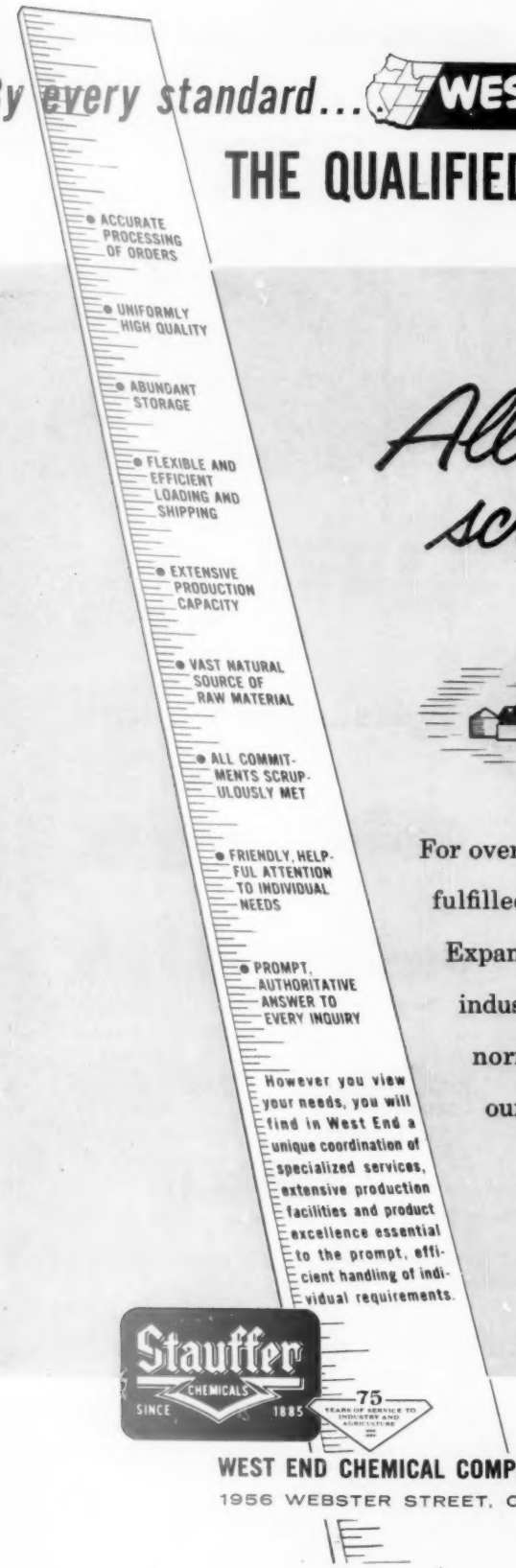
Built for pressures up to 125 lbs. Full range of sizes for all mill requirements. Write for Jordan Bulletin 22-SB.

The Black-Clawson Company
Shartle Division, Middletown, Ohio

Single Source for Stock Preparation Machines & Systems

BLACK-CLAWSON

By every standard... WEST END MEASURES UP AS THE QUALIFIED SUPPLIER OF SALT CAKE


• ACCURATE PROCESSING OF ORDERS
• UNIFORMLY HIGH QUALITY
• ABUNDANT STORAGE
• FLEXIBLE AND EFFICIENT LOADING AND SHIPPING
• EXTENSIVE PRODUCTION CAPACITY
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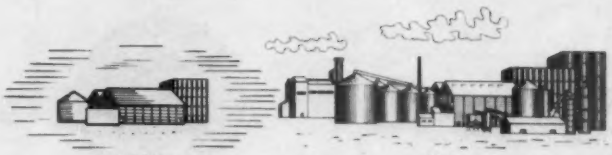
• ALL COMMITMENTS SCRUPULOUSLY MET
• FRIENDLY, HELPFUL ATTENTION TO INDIVIDUAL NEEDS
• PROMPT, AUTHORITATIVE ANSWER TO EVERY INQUIRY
However you view your needs, you will find in West End a unique coordination of specialized services, extensive production facilities and product excellence essential to the prompt, efficient handling of individual requirements.

All commitments scrupulously met



1925 1960

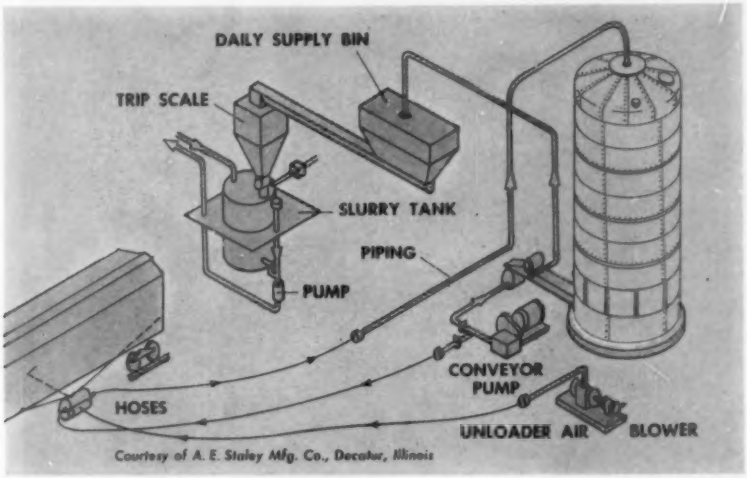
For over 35 years, West End has unconditionally fulfilled every commitment it has ever made. Expanding along with the chemical processing industry, West End meets the ever-increasing normal and unanticipated requirements of our customers with equal ease and dispatch.

Stauffer CHEMICALS SINCE 1885 — 75 YEARS OF SERVICE TO INDUSTRY AND AGRICULTURE

WEST END CHEMICAL COMPANY • DIVISION OF STAUFFER CHEMICAL COMPANY

1956 WEBSTER STREET, OAKLAND 12, CALIF. • PLANT: WESTEND, CALIF.

Here's a "TRIPLE-THREAT" cost-saving system for handling bulk starches



Courtesy of A. E. Staley Mfg. Co., Decatur, Illinois

A typical low air-volume pneumatic system for handling bulk starch with *Permaglas* Mechanized Storage Units. Shipped in hopper cars, starch is unloaded by air-activated gravity conveyors, and delivered by air to storage bin, and then to a daily supply bin through a hose and piping connected to the conveyor blower. Screw conveyor carries starch from daily supply bin to automatic scales which supply a continuous slurry make-up tank.

Permaglas® *Storage Structures*

...mechanical "sweep-arm" bottom unloader

...pneumatic or mechanical conveying systems

Permaglas Mechanized Storage Structures offer a "dynamic challenge" to the higher cost, conventional methods used in handling and storing bulk starches—granular, grit, pearl, and powdered—the basic raw materials in paper, textiles, food processing, baking, confections and pharmaceutics. You can realize lower costs in your starch processing operations when *slow and expensive* methods are replaced with *Permaglas* Mechanized Storage Units, equipped with the *exclusive* "sweep-arm" bottom unloader, and an efficient pneumatic or mechanical conveying system.

The major advantages of an automatic bulk handling system are:

- Bulk starch costs less than starch in paper or cloth bags.
- Labor costs are less. Save as much as 40 man-hours to unload a car of starch.
- Save warehouse space used for storage of bagged starch.
- Eliminate hidden dollar losses due to breakage, spillage, and residue left in bags.
- Prevent hazardous accidents with safer and cleaner plants.

What's more, you get this *exclusive* A. O. Smith feature. *Permaglas* Storage Structures are glass-fused-to-steel construction* both inside and out. They make possible sanitary, easy-to-clean, bulk starch handling systems. Eliminate corrosion. Safeguard starch from contamination. Reduce periodic structure maintenance to a minimum.

This low-cost automatic way to handle and store starches can be accomplished with minimum of capital investment. Certainly, it is worth further investigation. Mail coupon for details.

Through research ...*a better way*

A.O.Smith
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*HYDRASTEEL— Protected by U.S. Patent No. 2,754,222

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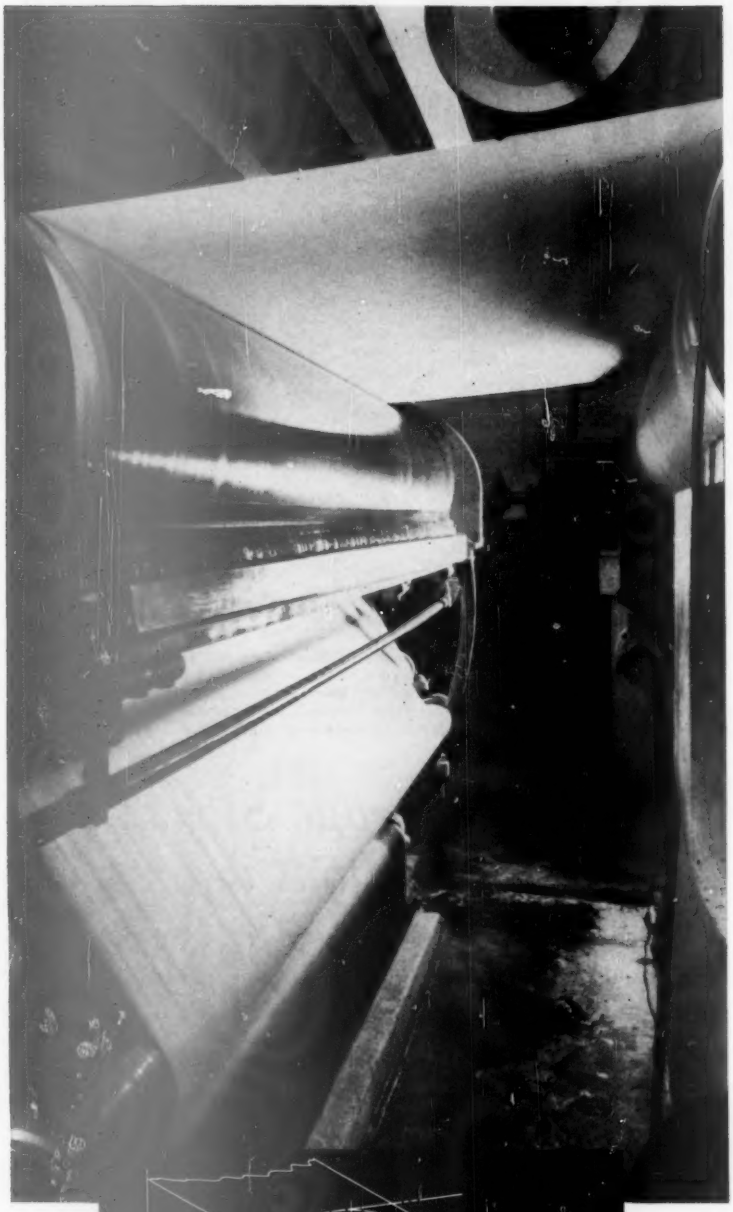


Lodding Press Doctors ride with the roll

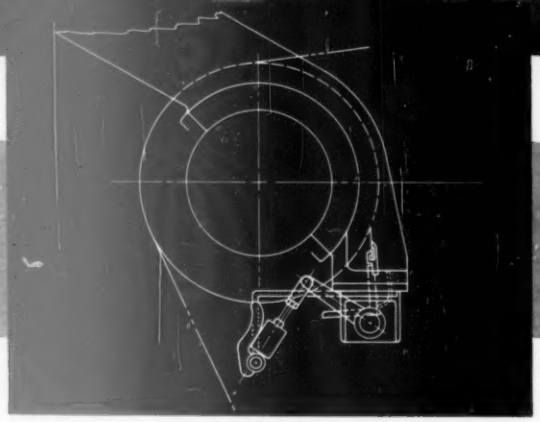
THE MECHANICALLY OSCILLATING top press roll doctor pictured here was custom made for the second press on No. 4 machine at the Sorg Paper Company. It was planed to conform exactly to the crown in the roll. Afterwards, it was optically checked, by means of a special alignment telescope, to make certain it came within critical tolerance specifications.

Mounted on the press arms, this Lodding Press Doctor always rides with the roll — in perfect balance, perfectly aligned with the axis, no matter what position the roll takes. Steady, uniform pressure is exerted by the blade over its entire length with no danger of damaging the roll covering.

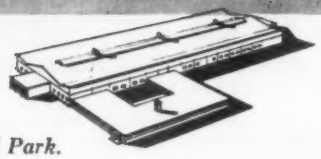
Thousands of custom-engineered Lodding Doctors, like this one at Sorg, are performing dependably on all kinds of machine rolls in mills everywhere. That's because each doctor was precision made by specialists for a specific application.

So whether you need doctors for press rolls or any others, from Fourdrinier to reel, you get guaranteed satisfaction in Lodding Doctors.

Get in touch with Lodding or your nearest sales representative for complete information.



LODDING
Engineering Corporation
AUBURN, MASSACHUSETTS



We welcome your inspection of our new plant located in Worcester's Auburn Industrial Park.

When it comes to

ALUM

liquid or dry

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DENVER, COLO.
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Come to

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As one of America's primary producers of aluminum sulfate, General Chemical has established a network of strategically located plants from coast to coast. Those listed above can provide you with a close, convenient source of supply. These modern plants are located in the heart of active consuming areas. They facilitate service to you. They save transportation costs. In addition, our chain of warehouses across the country makes stocks of dry aluminum sulfate readily available everywhere. Write or phone today for further information on how these facilities can be put to work for you.

Basic to America's Progress

Allied Chemical

GENERAL CHEMICAL DIVISION

40 Rector Street, New York 6, N. Y.

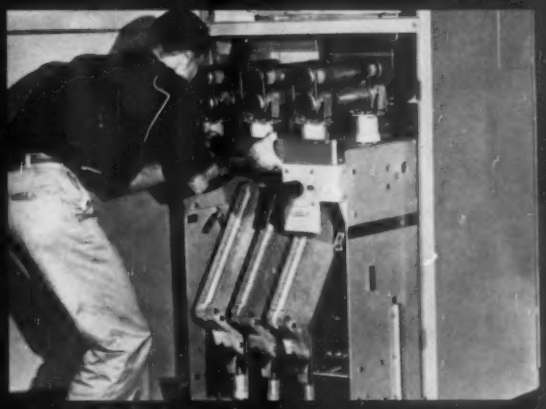
From General Electric comes the all-new draw-out Limitamp control—today's most advanced medium-voltage motor starter. Designed for the control of a-c motors rated 2300 through 4600 volts and up to 3000 hp, this new air-break starter has broad application throughout industry.

Since its introduction in 1941, Limitamp control has established a reputation for being first with the design features that add up to major user benefits. And, today's all-new Limitamp control follows this pattern with a host of design innovations that make for:

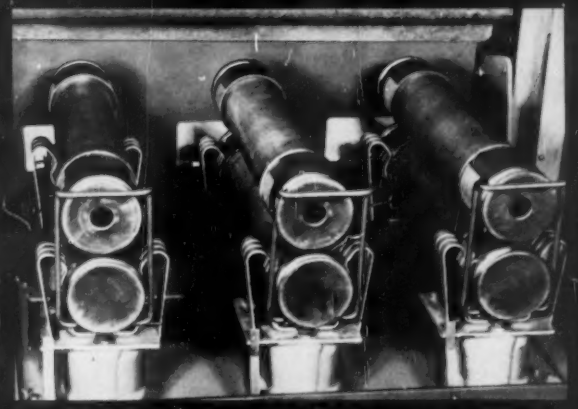
Faster installation: When you're ready to roll in the contactor—it can be done easily by one man. And, there are no connections to make—they are made automatically as the contactor rolls into place. There's plenty of space inside the panel for pulling the motor and power cables . . . and making the connections. And, with the new design, floor sills have been eliminated. This means no more grouting, no expensive cement work, simplified lineup with other panels.

Simpler, safer operation: One handle now controls the complete operation of connecting and disconnecting the starter from the bus and mechanically locking the high-voltage compartment door. A unique interlocking system protects the unit from misuse.

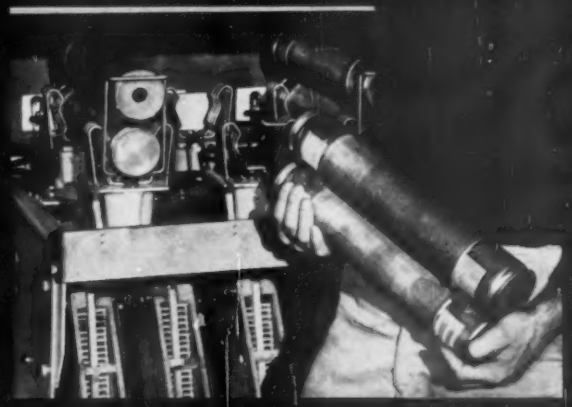
Superior protection: General Electric's new Limitamp



INSTALLS IN HALF THE TIME—Draw-out air break contactor, roomy isolated cable compartments, and increased working space help simplify installation.



LIMITAMP CONTROL IS ISOLATED AUTOMATICALLY—A unique shutter box isolates the starter from high-voltage power when the operating handle is turned to the off position.



INTERRUPTS FAULT IN FIRST ½ CYCLE—Fast-acting, current-limiting fuses interrupt circuit before short circuits cause damage to valuable motors.

NORMAL MAINTENANCE WITH CONTACTOR IN PLACE—All components, including the high-voltage contactor, can be maintained right in the control unit, with complete safety.

LIMITAMP* CONTROL

control utilizes fast-acting current-limiting fuses, ambient-compensated overload relays, and a high-voltage contactor to provide the most "positive" protection for your motors. Proved EJ-2 fuses interrupt a fault in the first ½ cycle, thus reducing damage to valuable motors. The performance of the completely coordinated design has been exhaustively tested in General Electric's high-voltage laboratory to provide the most reliable equipment for your application.

Easier maintenance: Even with these advanced design features, new Limitamp controls are simpler than ever to maintain. All components are accessible from the front for inspection and maintenance—without removing them from the enclosure. A special test circuit is built into each unit—permitting check-out operation before the unit is put into service.

For full information on all-new Limitamp motor control, contact your G-E Apparatus Sales Engineer or Agent today. Or write Sect. 783-10, General Electric Co., Schenectady, N. Y., for Bulletin GEA-6893. Industry Control Dept., Roanoke, Virginia.

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Corrosion Resistant Valves

Fig. 1559—Steel Lubricated Plug Valve for 200 W.O.G. Screwed gland type. 6" and larger valves can be furnished for gear operation.

Fig. 2433SS—Large size Stainless Steel Swing Check Valve for 150 W.P. Bolted Cap.

Fig. 2107—Stainless Steel "Y" Valve for 150 W.P. Plug type disc. Face to face and end flange dimensions conform to latest standards.

Fig. 1893—Large O.S. & Y. Gate Valve for Paper Mill Service. 3½ Nickel Iron Body, bonnet, yoke; stainless steel stem, screwed-in seat rings; Ni-Resist wedge.

Fig. 2491—Stainless Steel Gate Valve for 150 W.P. Outside screw rising stem and yoke, solid wedge disc. Can be supplied with interchangeable split wedge disc.

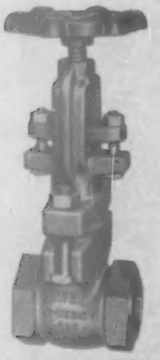

Fig. 2194—Small Ni-Resist O.S. & Y. Gate Valve for 225 W.O.G. Larger sizes, flanged end, and swing check valves in Ni-Resist also available.

Fig. 1832—Stainless Steel Gate Valve for 200 W.P. Screwed-in bonnet, inside screw rising stem, solid wedge disc.

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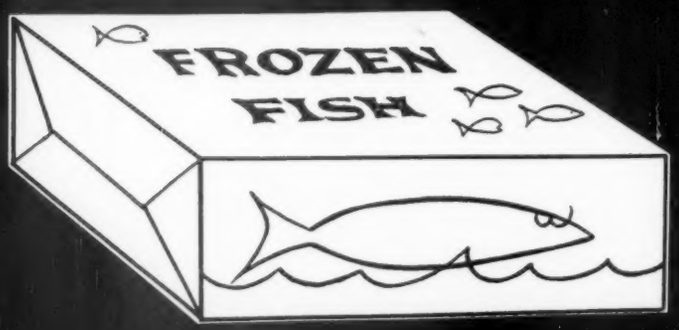

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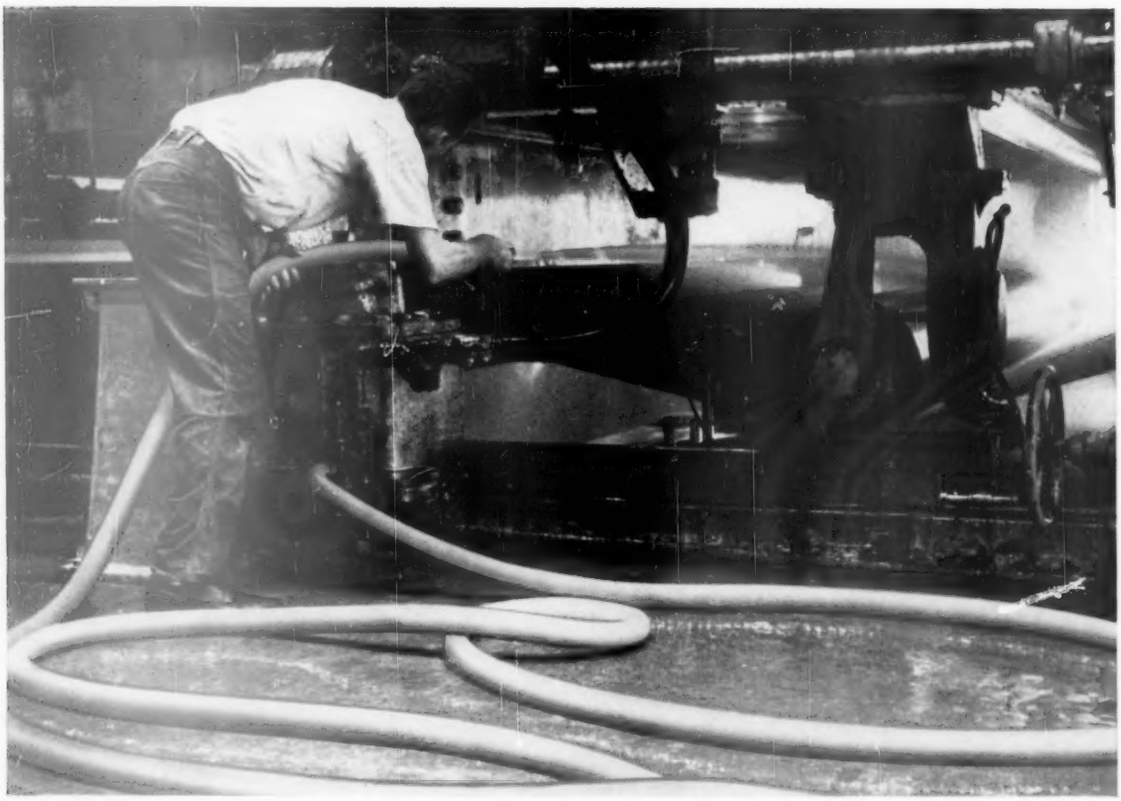
PAPER MACHINE HOSE

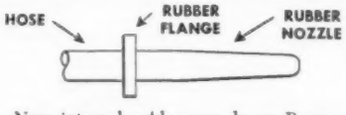


The Seminole Chief is washed daily with the hose that needs no care

24 hours a day... 7 days a week... this U.S. Rubber Hose is used to wash down the "Seminole Chief"—the giant new paper machine in the St. Regis Paper Plant in Jacksonville, Florida. The Fourdrinier wires, for example, must never be permitted to clog up with fibre. Clogging would mean shutting down the machine for an hour or more. Constant hosing prevents this. The hose itself is roughly handled—it lies on the floor all the time, receives no care whatever. Thanks to its abrasion-resistance, flexibility and durability, U.S. Paper Machine Hose *takes care of itself*.

• • •

When you think of rubber, think of your "U. S." Distributor. He's your best on-the-spot source of technical aid, quick delivery and quality industrial rubber products.



New integral rubber nozzle on Paper Machine Hose has a built-on flange approximately 4" from the end. Flange is ½" wide, ⅝" high; it prevents the nozzle from lying flat where it can be damaged. Workmen like the easy grip the flange gives.

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JANUARY, 1960 | *Published for the information of paper and board mills* | VOL. 2, NO. 1

Laurels For Lightweight Work

ECUSTA HAILS NEW WINDER FOR ROLL QUALITY

Langston Machine Meets Exacting Demands, Shaftless Backstand Saving Is Also Cited

In the production of lightweight printing papers and carbonizing tissues, particularly exacting demands are made on the winder to turn out top quality rolls.

Destined for customers with high speed printing and carbon-coating machinery, the rolls must precisely meet requirements as to width and overall size to insure proper register on presses and carbonizing units.

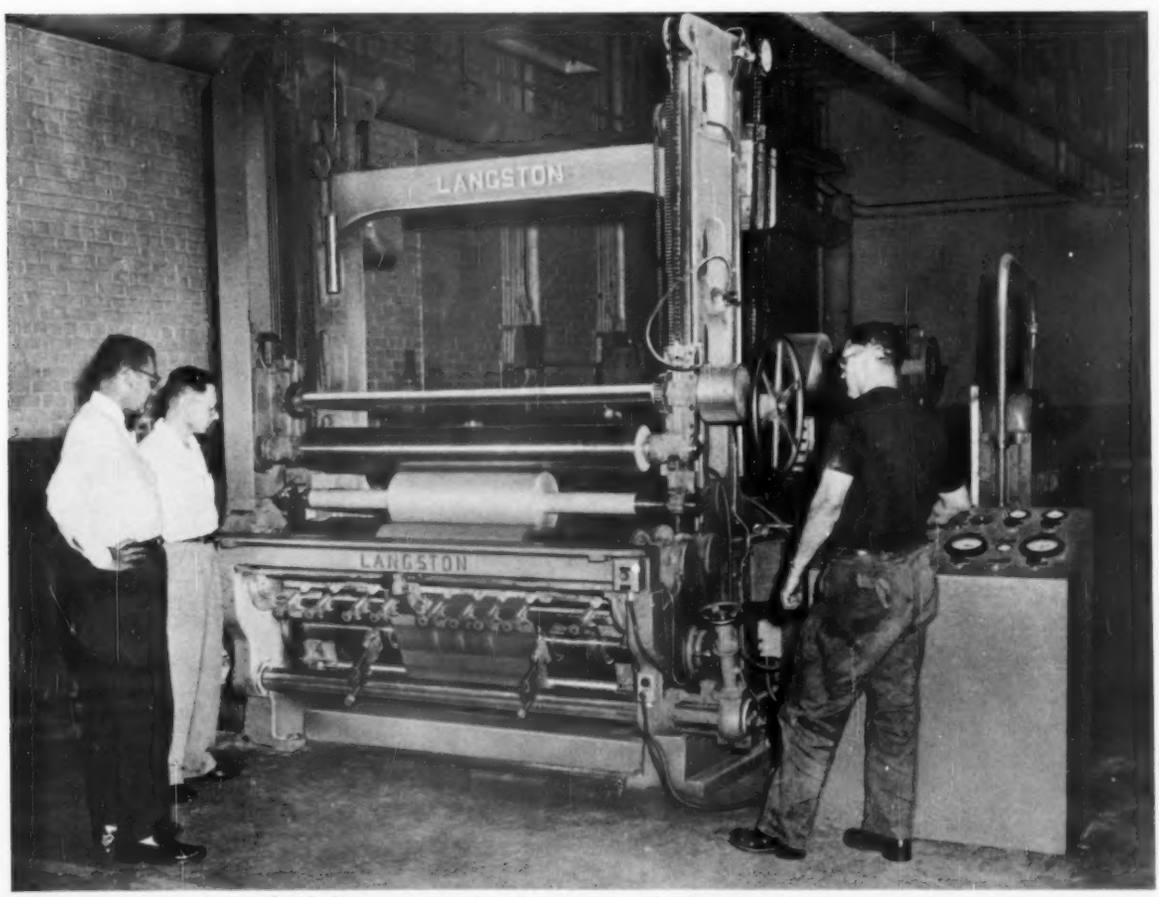
One highly successful operation on such lightweight papers, tissues and other specialty papers is performed at the Ecusta Paper Division of Olin Mathieson Chemical Corporation, Pisgah Forest, North Carolina. For this finishing operation, and salvaging as well, Ecusta utilizes a new slitter and winder and shaftless backstand installed last June by Samuel M. Langston Company.

What Ecusta Says

Says Ecusta of the operation:

"The Langston winder enables us to produce clean cut rolls of uniform density, free of wrinkles and corruga-

(Continued on Page 2)



OBSERVING OPERATION. A. J. Loeb, left, division vice president, Ecusta Paper, and T. E. Hall, assistant quality control manager, watch rewind of lightweight paper on new Langston winder.

(*Continued from preceding page*)

tions. The unique operation of the shaftless backstand saves a great deal of time and labor and adds tremendously to production tonnage."

Range, Volume Vary

Depending on types of paper processed and on customer requirements, the range and volume on the winder at Ecusta vary considerably but may exceed 25,000 pounds per day. The winder is used to produce a number of small rolls from mill rolls in accordance with customer specifications.

The paper wound may range from seven to 40 pounds (25-by-38-inch basis) with a volume of up to two finished rolls per hour. The sizes of mill rolls vary from 15 to 62 inches in width, from 15 to 50 inches in diameter and from 200 to 2000 pounds in weight.

The lightweight printing papers are used in offset, letterpress and other types of printing where thinness, uniformity of surface and basis weight, coupled with the strength and opacity of the sheet, are qualities required by high speed rotary and flatbed presses.

Used in Bibles

Ecusta printing papers are used in Bibles, insurance rate books, annual reports, sales aids and other publications where bulk is an important factor.

The Langston winder, a 62-inch wide machine, has a rated speed capacity of 2500 feet per minute and is driven by a 20 horsepower variable voltage D.C. drive motor.

Super-Precision Slitters

Outstanding on the winder are the new Langston super-precision slitters, designed and built for the ultimate in accuracy.

Also included are such features as constant tensioning of the sheet and a rider roll torque drive which is controlled by the operator at the console where he has also at his fingertip control of all other working components of the winder and backstand unit.

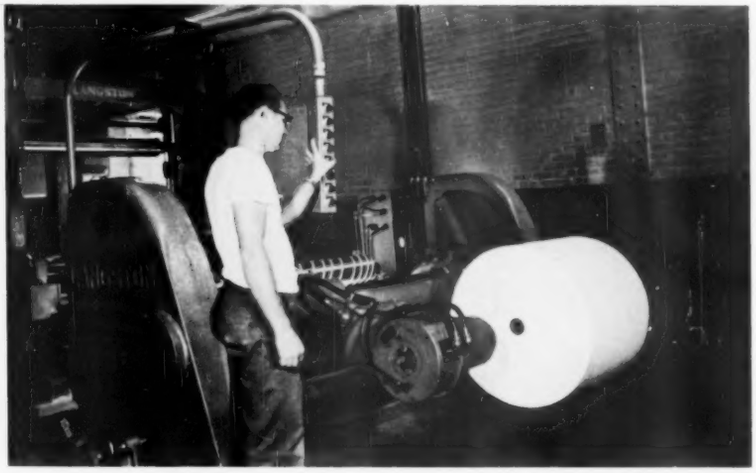
All rolls are mounted in precision, roller-type bearings. The rewind shaft is equipped with ball bearing housings for maintaining position.

Backstand Features

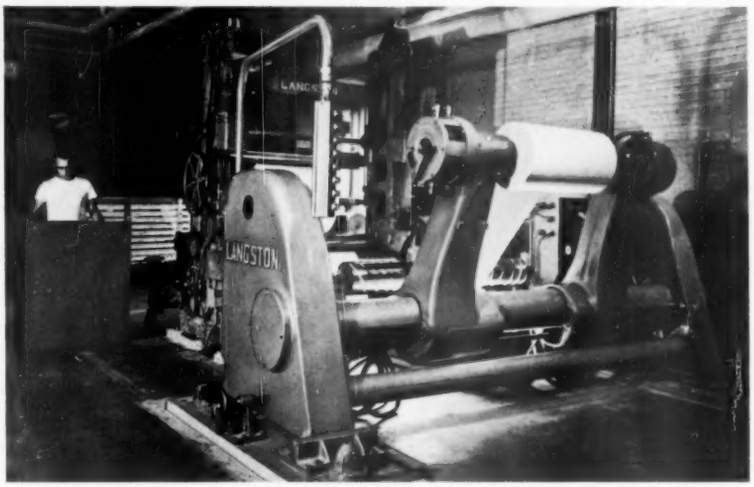
The shaftless backstand provides fast, completely mechanized roll loading. By pushbutton, one man can engage the roll with the lifting arms, raise it to position, adjust it laterally either on center or off center while stopped or moving and, if need be, the unit can be equipped with web alignment and oscillation so that the whole backstand can be moved laterally automatically.

Hydraulic cylinders power the lifting arms, engage the roll core with cone shaped spindles and raise the roll into proper unwind position.

Hydraulic cylinders also effect lateral adjustment by moving the lifting arms laterally along the lift tube. The arms are mounted on keys secured to the tube. This arrangement permits easy lateral adjustment of the roll for centering or off-centering, if required.



EASIER WAY TO LIFT. By pushbutton, operator prepares to engage roll with cone shaped spindles on lifting arms. Then by pushbutton he can raise roll into position and adjust it laterally for center or off center, even when the rewind is in running operation, as it is in photo below.



RUGGED CONSTRUCTION of backstand's side frame, lifting tube and arms contribute to its capability for high speed, trouble free operation.

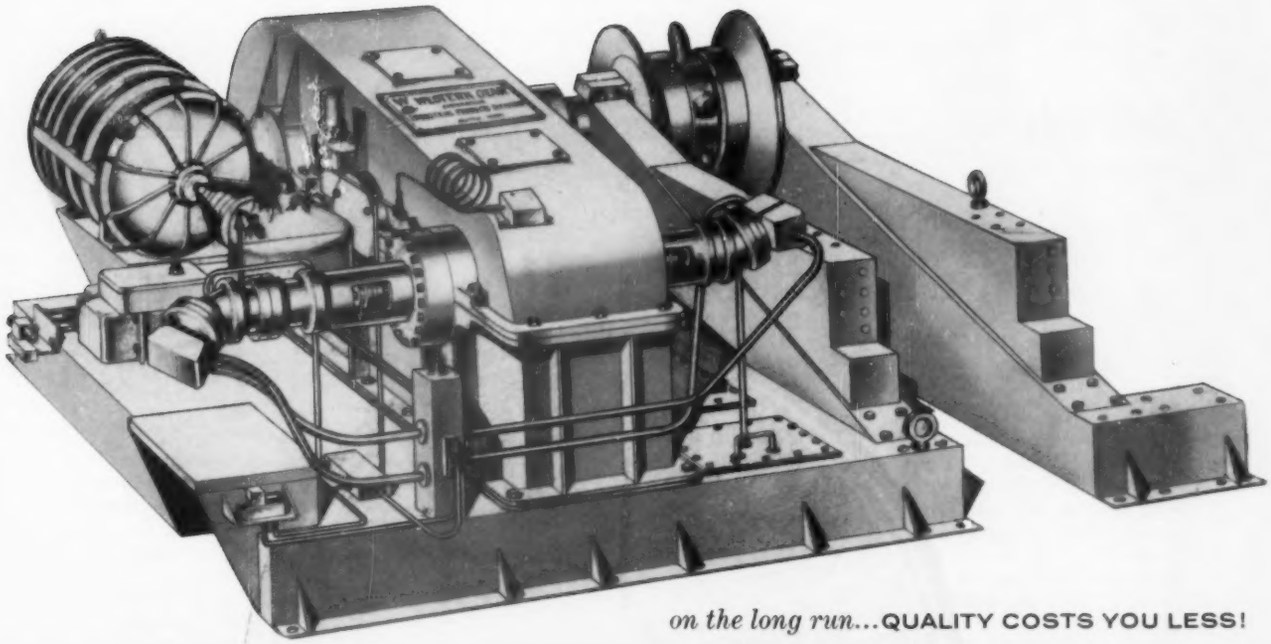
Roll Dimension Capacity

The arms can be adjusted for a minimum roll width of 12 inches and can lift rolls ranging in diameters from 15 to 60 inches.

Pneumatically operated brakes—one on each roll cone—incorporate thermostatically controlled water-cooling and provide constant tensioning throughout the unwind.

Side frames, the lifting tube and arms, and cone and spindle structure are all of heavy duty, extra rugged construction for high speed, trouble free operation.

When this type machine is fitted with edge guiding, web alignment and oscillation, the stand as a unit moves automatically on side frame roller bearing-equipped sole plates.



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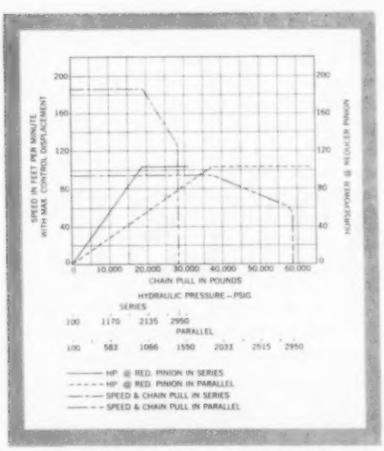
ANOTHER WESTERN GEAR 'FIRST'...ELECTRO-HYDRAULIC LOG HAUL DEVELOPED FOR ALASKA LUMBER & PULP COMPANY

The electro-hydraulic log haul pictured here, unique among the 175 gear drives supplied for the new mill embodies a new concept developed by Western Gear engi-



Operational requirements were: 48 ft. of rise in 220 ft. of haul; maximum chain pull not less than 50,000 lbs. nor more than 65,000 lbs; haul 200 ft. of 24" diameter logs at 120 ft. per minute.

Extra measures of quality that made this design the most practical and economical choice over all other log haul drives are:

1. Infinite speed variation from 0-185 FPM permits continuous maximum mill flow regardless of variable debarking time.

2. Horsepower Limiter Control automatically adjusts for maximum preset horsepower to allow full capacity operation regardless of load.

3. Absence of shock loads. Electric motor runs continuously, softer starting of hydraulic drives eliminate major service problem.

4. Positive Overload Protection. High response relief valve removes pressure to motor, instantly sets fail-safe hydraulic brake.

5. Unitized Construction integrates base, valve components and piping into protected self-contained package, completely tested at factory.

The considerable knowledge of marine electro hydraulic deck machinery combined with their background in power transmission equipment and log haul was invaluable in the Western Gear development of this important new concept of log haul design.

Western Gear's experience in electro-hydraulics and infinitely variable speed power transmissions can solve your drive problems. For full information, write, wire or phone:

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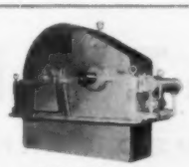
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Scott Paper Co. Sets Pattern for More International Partnerships

—Chicago

1. Scott Paper Co. is "very optimistic" over the future of its many international paper companies and it plans to extend these into other countries.

2. It foresees "important increases in the consumption of paper products" in many countries. "There are risks which cannot be overlooked, but we expect returns will fully justify these risks," said a Scott spokesman.

3. The unusual "50-50" equal-share partnerships which Scott has created in several European and Latin-American countries are proving successful "because of the very fine character of the people with whom we have joined."

These were statements made by Dudley O. Ward, treasurer of Scott, fifth largest U.S.A. paper company, during a talk before investment analysts here and in answering many questions they raised.

He emphasized the point that Scott plans to continue creating these equal partnerships with high caliber paper companies already in existence in other countries. It is "the kind of people with whom we associate" which will continue to assure the success of this program, he said.

These words of praise were especially for Bowaters officials in London, the Cusi brothers in Mexico and Mario Urebe-Urebe in Colombia. Bowaters-Scott Corp. is similarly an equal partner in Belgium with Papeteries de Belgique, which makes 33% of all the paper produced in that country.

Scott recently became a 20% owner in the new soda-base 2-stage sulfite pulp mill which Stora Kopparbergs Bergslags AB, of Falun, Sweden, is building near Port Hawkesbury, Nova Scotia, Canada. Stora owns 80%. Scott agrees to take a minimum percentage of the 350 tons per day of "Stora 59" pulp which this company, Nova Scotia Pulp Ltd., will produce, beginning in 1962. One major point in the Scott-Stora agreement which was not previously published is that Scott will share in future technical pulping advances by Stora.

Mr. Ward told his Chicago audience that the "Colombia type" operation will probably be the pattern which Scott will follow in future.

When import restrictions were imposed in Colombia, Scott decided to build a converting plant at Medellin, Colombia, a city of a quarter million people, in the Andes about 200 kilometers north of Bogotá. "Otherwise we would have lost a very important market," said Mr. Ward. "In time we expect to expand our business above the former level."

Mario Urebe-Urebe had been Scott's sales agent. Now he is its equal partner in Scott de Colombia S.A. Scott ships parent rolls to Medellin, which are then made into Scott trademarked tissue.

In Three Countries with Bowater

A second tissue machine within two years was recently started up in the Scott-Bowater jointly-owned tissue mill at Gravesend, England. The new machine is a 130 in. deckle Walmsleys Fourdrinier with Beloit air cushion inlet and both this machine and the 130 in. Black Clawson No. 1 machine which started up about two years ago are rated at 2,500 feet per minute or more.

"In the Australian venture we will again be associated with Bowater," said Mr. Ward. "We are purchasing a 50% interest in a company which will manufacture and market household paper products under its own trademarks or under those of Scott or Bowater-Scott. Scott will supply capital and certain technical assistance and will grant licenses for the use of Scott patents and trademarks. We may or may not supply personnel on a permanent basis."

He described the Bowater-Scott partnership with Papeteries de Belgique as a step "to gain a foothold in Europe's Common Market." Parent rolls are being supplied by Bowater-Scott and household paper products are being made at Lembecq. When, and if, the market warrants, this mill may add a tissue machine. The market is in Belgium, Holland and Luxembourg and only the northern portions of France and West Germany. Thus, Scott is still not in Southern Europe, but this may lead to another European partnership.

Companies are Profitable

Up to this year, Scott invested $25,000,000 in international operations. Sales in four companies in Canada, England and Mexico in 1958 totalled over $62,000,000 and this year are running at a $75,000,000 rate. All these four are turning in profits. Two of them, Westminster Paper Co., with mills in British Columbia and Quebec in Canada, and Cia. Industrial de San Cristobal, Mexico City, are on a dividend paying basis.

A wholly-owned Panamanian subsidiary, Scott Overseas Corp., now holds all Scott international investments except those in Canada. That company will be consolidated so future earnings of Overseas, from dividends, interest or technical service fees, will be part of Scott earnings.

Clupak Sues Scott Over Expandable Paper

Scott Paper Co. has applied for patents for a creped expandable or stretchable paper called "Expandakraft," but it is to be made for multiwall bags only.

Clupak, Inc., manufacturers of the Clupak extensible or stretchable paper, first developed at the Charleston, S.C., mill of West Virginia Pulp and Paper Co., is suing Scott for patent infringement. Scott is going to defend its product and the issue is expected to be decided in the courts.

Clupak was organized as a separate company in Jan. 1958 to license, promote and carry on research with the new product developed jointly by Sanford Cluett, inventor of Sanforized shirts, and West Virginia.

The Challenging Sixties...

BY THE EDITORS

This comprehensive report on what the new decade has in store for pulp, paper and paperboard was compiled in interviews in all parts of the country. PULP & PAPER, which is the only magazine in this industry with resident full-time editors in every major region where pulp and paper is made—Northeast, South, Lake States, Pacific Coast and Canada—interviewed presidents, engineers, technicians, machinetenders, etc. Here is what they foresee.

● If the pace of progress that has been set in each succeeding decade of the Twentieth Century continues in the Sixties, and it seems likely it will, the industry will see such changes in the next 10 years that it has not seen in fifty. Never in any previous century of recorded history has so much scientific progress been made within such a short time. For the paper industry, the day of the technician is here. The day of "by guess and by gosh" is history.

This is not to say that overnight a golden age is born with the dawn of a new decade. The same problems that plagued the industry on December 31, 1959, confront it on January 1, 1960.

But beginnings are a time for reappraisal, a time for re-evaluation of problems and prospects. And now at the beginning of a new decade, the pulpwood, pulp, paper and paperboard industry is busy assessing its prospects in the Sixties.

Some forecasters already have dubbed this decade the Sensational Sixties or the Golden Sixties. More conservative observers bluntly state that each decade has had its economic peaks and valleys. They do not expect the Sixties to be any exception.

To appraise the Sixties, it is helpful to examine trends in the Fifties. The industry entered the Fifties with a record production of some 24,375,083 tons of paper and paperboard in 1950 and finished with another record of an estimated 34 million tons. In the same interval the nation's appetite for paper grew from 382 lbs. per person to 431 lbs., while population grew from 151 million to 179 million.

Pulp production climbed from 14,848,951 to 24 million tons. Pulpwood production in 1949 was 19,945,000 cords and soared some 20 million cords to about 39 million cords in 1959.

The engineering accomplishments of the Fifties are also impressive. Continuous pulping, chlorine dioxide bleaching, the pressure headbox, suction breastroll, the suction pick-up felt, semi-automation in stock preparation and blending, the trailing blade coater, the formers, on-machine coating, Southern kraft coating of paperboard, high velocity air dryers, beta gauges for quality control, finishing room automatic inspection and conveying devices, and automatic broke handling. The Fifties accelerated use of sawmill residues, brought outside chip storage, air conveying of chips, the pulpwood pallet, improved power saws, land site preparation and intensive land management.

Since 1950, says one estimate, 90% of equipment in the mill is new. The industry enters the Sixties with a new generation of technically schooled management.

The Capacity Situation

The distinction between overcapacity and undercapacity can be a matter of delicate timing. New capacity involves years of planning, followed by two years of construction. In that interval markets change.

The industry had a close shave in the Fifties. The urge to expand hit too many companies at once and the pace was such that many veteran observers were reminded of the disastrous Twenties. Fortunately they were not afraid of being unpopular by sounding warnings. Fortunately, too, the men who make decisions took their advice and several million tons of pulp, paper and paperboard were cancelled or temporarily shelved. The recovery from the 1958 recession was rapid. In 1959 the industry was again breaking production records.

For Growth, These Factors

The U.S.A. population of 179 million in 1959 is expected to reach 180 million by mid-1960 and 208,000,000 to 214 million by 1970. This added population alone will require more paper. Stepped up collective and individual research will insure the development of new products and new markets for the old products. At the same time, some markets are sure to be lost, too, to plastics, aluminum, etc. Although the U.S. per capita paper

U. S. PAPER AND PAPERBOARD

In the Fifties . . . Production Rose 40%

1950 24,375,000 tons
1959 34,000,000 tons

Here is Projected Demand for the Sixties:

By 1970 Production Requirements Will Be . . .

40,600,000 tons
(based on 425 lbs. per capita)

43,300,000 tons
(based on 450 lbs. per capita)

48,600,000 tons
(based on 500 lbs. per capita)

What's Ahead for Pulp-Paper

Golden Age of technician-manager
Merged chemicals and pulp firms
Quality control of forest crops
Automation and sensing instruments
Thermal and ultrasonic debarking
Continuous pulping, flash drying
New "instant" pulp making process
Shorter paper machines, fast dry

consumption is high (431 lbs. in 1959), there are uneven-use regions such as the South and West where booms will boost consumption.

The tree is one of the most complex chemical plants and a constantly renewable raw material. Pulp and paper companies in the '60's will join hands with the chemical industry to build and operate chemi-cellulose plants as jointly owned enterprises. Some by-products from the pulp process may prove more valuable than pulp.

More breakthroughs in by-product use are imminent. Significant progress has been made in such by-products as alcohol, oil well drilling muds and tall oil to name a few. Bark will be more valuable as mulch for flowers than as fuel.

Sixties Will Bring Better Forest Control

"Tell us what kind of a fiber you need and we will grow it." This is the "official" declared objective of industry foresters. Pulp and paper technicians will cooperate. These two groups will get together and talk a common language. In the '50's each had operated in his own sphere without contacting each other. Forest genetics, superior seed trees, land site preparation and intensive land management will advance rapidly on a broad front.

The promise of better, faster growing trees is fascinating. It is a science man knows little about. He still doesn't know why a tree grows; what makes a difference in fiber; what makes sap flow.

The foresters are crying for help. The industry is rushing with all facilities at its command to help solve these complexities. Some day foresters will grow tree crops with the same assurance of quality control as a progressive corn farmer now has.

Says one geneticist, "We have barely scratched the surface. A forest geneticist may cite a few examples of how inheritance works in trees. A corn geneticist can cite hundreds."

The herculean task faces foresters to produce possibly an additional 10 million cords/year by 1970. It cannot wait for long range studies by geneticists. Other agricultural plants and residues will be used for fibers. This will be true everywhere, but especially in countries without available forests. But in 1970, trees will undoubtedly still be the best and most practical source of papermaking fibers.

Automation as Envisaged in Mills in '60's

In 1960 this industry has reached a stage best described as semi-automation. In the '60's it will move to full automation, or almost there. "I don't think full automation is practical for the paper industry," says one chief engineer, however. "It costs too much and you still have to have men on hand."

There is a "fully-automated" paper machine that has been in operation for several years and there will be more. The only manual labor is threading the machine. Only if pulp furnish is changed, is there trouble with breaks. Then men are needed.

But automation in various degrees will help the industry boost quality uniformity and quantity of product.

The question of automation, wherever it is applied in the mill, resolves back to the basic problem of the fibers and how they behave. "But the day is coming when you will test a certain pulp and know what qualities you are looking for and you will be able to say this pulp if added to another will run the same as the pulp you used yesterday."

Automation will go ahead, says one observer, when mills have data accumulation. This must be the first step. Data will be accumulated and computed on one sheet in the manager's office, where someone with technical knowledge will look at it and say this is what is really going on in the mill.

There are all types of sensing instruments. The trend in the '60's will be to develop one complete package. In this decade it is expected the industry will finally know enough about the process to make educated guesses as to what equations have to fit into the computers. The industry will employ workers with a foundation in mathematics and knowledge to use these equations ably.

The industry will move away from using statistical quality control methods to application of mathematics to production.

In the next ten years it will have employes trained in electronic techniques which will enable mills to go to electronic controls instead of pneumatic. The hardware is here. It is only the need of trained people which is holding the industry back.

WHAT'S AHEAD IN THE SIXTIES

Woodroom, Pulp Mill, Bleaching of '60's

There are several new possibilities for debarking at the mill. Thermal debarking using steam is feasible but expensive. Ultrasonic debarking, says one expert, may be the real answer. There is a boundary between bark and the wood. Why work on the whole log structure when you can concentrate on that boundary?

A group of Southern mills has sponsored a research project on bark removal. The project reportedly is a success but because of patent applications, there has been no publicity. It is a bark flotation process. Logs are chipped with the bark on and bark is separated from chips in some aqueous medium.

Of special interest is flaked wood now being produced by special chippers and used by flaked board mills. Flaked wood has application for continuous pulping by shortening penetration time, gives a more uniform cook and a higher quality pulp. For calcium bisulfite and kraft processes, flaked wood would mean a shorter cooking cycle.

A new type chip shredder offers remarkable promise in the search for uniformity of chip size for liquor penetration. Full size chips are fed to the chip shredder. Resulting chips are as long as the original chips but greatly reduced in cross section. Fiber yield is increased and power requirements are low (½ hp/days per ton) .

Fiber conveying in the woodroom will change the complexion of the mill in the '60's. Some air conveying systems now carry chips or bark for distances in excess of 1700 ft.

Pulp Mill will be Continuous

Continuous cooking will keynote pulping in the Sixties. There will be very little batch or intermittent operation from digester through washing, bleaching and screening.

Look for new developments, says one pulp superintendent, to take us away from kraft pulping. Research people will learn new ways to cook wood for higher yields. The use of hardwoods will grow and mills will use them in more grades.

Continuous pulping will offer uniformity of product, stable steam and hp requirements, lower labor costs and lower digester corrosion rates.

Continuous pulping will spread to more fine paper pulp processing the world over. There are probably four to five million tons of pulp now produced each year by continuous digesters the world over, with about 20 systems in North America.

There are an estimated 1200 batch digesters in the U.S.A., about 345 sulfite digesters, 640 sulfate, 61 soda, 120 to 125 semichemical and 36 cotton linter. Despite the trend to continuous digesters, two new mills, one in Canada and one in the Southern U.S.A., went batch. One mill selected small capacity digesters for greater flexibility of production with hard and soft woods.

"Instant" Pulp

A new pulp for this new decade—"instant" pulp, will use temperatures in range of 536°F and pressures around 1000 psi to produce pulp in 15 to 90 seconds with good softness and opacity in the yield range of 50%.

A pilot plant (3 tpd) operation will begin soon on a new continuous cooking system to produce kraft pulps in 30 to 40 mins., high yield pulps in 15 to 25 mins., semichemical pulps in 30 to 45 mins. and acid sulfite pulps in about 60 mins. The process involves an upflow digester with a screw design.

Bleaching Trends

Chlorine dioxide bleaching changed

More Companies to Invest Abroad

The European Common Market, the rapidly forming Outer Seven Trade Area and perhaps, ultimately, a combination of the two in Europe, and other common markets in other parts of the world will prove fascinating magnets to American pulp and paper companies in the 1960's.

The already established Common Market of the "Inner Six" European countries, with its program of gradual lowering of tariffs within its border, will become more effective with each scheduled annual 10% reduction of existing duties. The second reduction goes into effect this month.

American industries are intrigued with the prospects of increasing per capita consumption of paper in many countries around the world. In Asia and Africa, per capita consumption is only a few pounds a year compared with about 400 in U.S.A. and 200 in Britain. However, the greatest percentage growth in paper consumption will be in Europe—about 4% a year.

American paper companies will take different views of whether to invest abroad, and if they decide to, how to do it. Some companies see danger of building up their own competition, and a flight of gold reserves weakening the U.S. Some companies like Continental Can-Robert Gair want only minority interests in companies abroad because "those people know their own business best." At least one company, Scott Paper Co., is happy with "fifty-fifty" partnerships, of which it has several and is seeking more—it works well because "we are combining with people of high caliber"—and others want a majority interest.

Besides Germany, International Paper is now going into Italy. Kimberly-Clark adds France to several countries it has entered with operations. One thing is sure—there will be more partnerships in pulp and paper making between U.S. companies and leading firms in other lands.

But some observers do not expect a phenomenal paper business growth, even in Europe. The frozen food boom in Europe is not materializing as fast as predicted. Consumers, particularly French housewives, have shied away from frozen foods. For one thing, they must have home refrigerators, and much of Europe has not reached this stage. Old customs may change more slowly than some expect.

In the Sixties, many African and Asian nations will assume more independent status in the community of nations and will demand the same high standards of living enjoyed by others. In this age of accelerated jet travel, people will see more readily the difference between what they have and what others have. The whole world will be "catching up with the Joneses." More and more paper products will be needed.

the entire face of bleaching in the late Fifties. In the Sixties there will be more chlorine dioxide plants and expansion of existing plants.

There are now about 55 plants for chlorine dioxide generation in North America. All new plants that go to bleaching, says one expert, will use chlorine dioxide and some large plants that don't have it as yet, will.

There will be talk this decade about high density bleaching in the range of 20% to 40%, but one bleaching authority says, no, that consistencies have been pretty well established at 12% to 16%. Higher consistencies, he says, will save steam but chlorine dioxide will not penetrate pulp to get desired brightness and uniformity.

Hydrogen peroxide has been used in a fifth stage for increased brightness and a new process soon to be announced promises even higher brightnesses.

Flash Drying of Pulp

Several mills in North America use flash drying processes for pulp. These systems reduce moisture consistency in the finished bale with about 96% a.d. pulp; reduce shipping costs and storage space, and pulp can be shipped to more distant markets and stored in warm climates. This allowed one mill to expand its pulp export market some 25%. The pulp appears more friable, disperses more readily than wet pulps.

More About What the Sixties Will Bring In Our February Issue:

The Outlook for Pulp . . . Paperboard . . . Kraft
Things to Come in Coating . . . Refining . . . Drying
Converting . . . Finishing . . . Research . . . New Markets

New Paper Machines Will be Shorter

Biggest advancement in the paper machine of the Sixties will be its reduction in length. Paper will be formed at much higher speeds in the 4,000 fpm range on publication papers, to the 5,000 fpm range on lightweight tissues. The dryer section will consist of possibly 8 to 10 high velocity jet dryers.

There will be much emphasis on suction forming on all grades. Full pressure headboxes are here now to supply stock to the wire at the high speeds required. The pressure headbox which gained popularity in the Fifties will continue to gain acceptance for both quality and high speed.

The new forming devices have been hailed as the first significant advance in papermaking since the Fourdrinier. To date applications have been limited to lightweight tissues and boxboard. One question: Will the formers produce a clay filled sheet?

Machinery manufacturers are hard at work to perfect various formers.

One manufacturer expects their applications to be expanded in the next ten years.

Talk of 4,000 fpm operations are not day-dreams. There is a machine in the industry which *averages* 3,400 fpm. A new machine just put into operation in the U.S. is reportedly geared for 5,000 fpm operations.

The multi-wire British-conceived Inverform has good possibilities for lightweight paperboard at hitherto unheard-of speed for such grades of 2,000 fpm, with some talk about 5,000 fpm range.

Newsprint machines appear to have reached a speed barrier in the 2,500 fpm range. Table rolls, says one machine builder, are a barrier to high speeds. There will have to be a breakthrough in wet end hydraulics before machines can go much higher. We are approaching speeds, says one engineer, where table rolls are dubious factors.

One engineer says he'd like to see a variable pass headbox where baffles can be adjusted as well as rectifier rolls for best performance of the grade being made.

One "way-out" idea from a research director asks why the Fourdrinier wire couldn't be extended and run right through to a high velocity jet dryer—eliminating the press section.

The press section of the Sixties will feature sensational changes. Press rolls may be covered with a thin ceramic coating such as is used on the nose cones of outer space missiles. Fiberglass coated press rolls may also be used. Both will feature instant sheet release.

Automatic web threading may be expected in the next ten years. It will be tied in with automatic break arrestors and sluice controls.

A development for the Sixties, already under way, is sheet forming on a felt instead of a wire. Plastic coated Fourdrinier wires are also being tested. The suction breast roll is useful where it isn't necessary to keep your fiber in suspension and goes hand in hand with good headbox formation, is applicable for grades that don't require shaking. New materials such as polyurethane hold promise of better flatbox operation to materially reduce drag and wear on wires.

The industry has been noticeably slow about adopting the twin wire Fourdrinier. But one company has found acceptance of its twin wire production so good that it is considering a second, larger machine. One big advantage is elimination of the wire mark, the ability to produce a sheet with two felt sides.

Machine of the Future

The paper machine of the Sixties will, say some experts, combine the former with a series of high velocity jet dryers and possibly on-machine coating. It would involve considerably less capital investment. Such a machine too, would be semi-automated with automatic quality control sensing units across the web to signal deviations from standard production. Automatic break arrestors would detect a break, break down the web and restore it—all without human guidance.

Record Paper Consumption! 1960 Will be 3% to 4% Higher

An all-time high record for U.S. paper and paperboard consumption of 38.3 million tons for 1959 is estimated, according to William A. Hanway, secretary, International Paper Co.

A new record, 3% to 4% higher is expected in 1960, he added.

The 1959 figure is 8.5% above 1958, and nearly 5% above the previous 1956 high.

For What is Coming in This New Decade In Woods and Woodyard – See Pulpwood Section

Georgia: 400-Ton Kraft Mill

● An impressive list of Georgia bankers and business and industry leaders are backing plans for a new $40,000,000 kraft pulp and paper mill of 400 tons daily capacity, at or near Manchester, in Southwest Georgia. Several sites are favored.

Under investment regulations, shareholders are all from that state. But the imposing array of prominent and wealthy backers and the fact that 15,000 shareholders already have invested more than $11,500,000 in the company, seems to assure its success.

Southern Land, Timber & Pulp Corp. is the name of the company and its president, John J. Neely, Manchester livestock man and peach grower, says that it already has acquired 1,000,000 acres of timberland in more than 30 Georgia counties and in Alabama. Members of the board of directors control another 400,000 acres of timber producing land, enough to guarantee a mill even larger than the projected first unit. Organized in May 1957, Southern Land has been busy acquiring land and planted 3,500,000 seedlings this year and will duplicate this figure in 1960.

ED COWAN, executive vice pres. for new mill in Georgia, to head engineering. Office at 795 Peachtree St., N.E., Atlanta, Ga.

T. Hiram Stanley, chairman of the board of Royal Crown Cola, is chairman of Southern Land's executive committee. Elmer Loftin, Manchester bank president, is secretary-treasurer. Other executive committeemen are Clarke Duncan, president of a Buena Vista, Ga., bank; Judge J. M. C. Townsend of the Georgia Court of Appeals, Atlanta, and R. C. Brooks, president of a Reynolds, Ga., bank. Many other prominent Georgians are members of a large board of directors.

Shares are being sold at $5.95 each to Georgia residents only. The price has nearly tripled. Shareholders have voted to split the stock soon.

Edward L. Cowan, former vice president and chief engineer of Bowaters Southern Paper Corp., and recently vice president and chief engineer of North America Bowaters Engineering & Development Inc., has resigned that post to become executive vice president of Southern Land. He will head up engineering and equipment purchases and he has opened offices for this purpose at 795 Peachtree Street, N.E., Atlanta.

Mr. Cowan has been an engineer in this industry for 25 years and planned and supervised construction at Bowaters plants in Tennessee, South Carolina, Newfoundland and Nova Scotia. From 1933 to 1953 he was engineer with Gaylord Container Corp., Bogalusa, La.

Southern Land now hopes to be in construction by the end of 1960 and in production by 1962.

$4½ Million to Improve Oregon's Largest Mill

Crown Zellerbach Corp. undertakes a $4,500,000 program to improve efficiency and product quality at its 10-machine plant at West Linn, Ore. According to Res. Mgr. M. J. Otis this project is part of CZ's continuing policy of increasing mill productivity by constantly upgrading its paper products.

Blade coating equipment to be installed on the mill's two publication-grade paper machines will equip the West Linn plant for manufacturing coated paper similar to that produced at Crown-Time's new St. Francisville, La. mill. Installation of blade coating equipment on No. 5 and 6 machines is to be completed by the end of June. Both machines will be equipped for producing double-coated magazine and printing papers for 4-color high-speed presses. Broke beaters on these two machines are to be replaced by Morden Slush-Makers.

Special screens are being installed in the groundwood mill to improve pulp quality. Long hair-like fibers and course materials removed by the screens will be utilized as fuel. A 100 ton/day sodium-hydro-sulfite bleaching unit is to be added by early summer to improve quality of certain book grades.

A new large refiner unit, to make groundwood pulp from chips, will be powered by two 1,000 hp. motors and is expected to produce as much pulp as can be obtained from three grinders in the present groundwood mill. The new refiner is similar in principle but larger than an experimental unit in use at CZ's Central Research Dept. at Camas, Wash. Centrifugal cleaners have been installed on three large paper machines and a fourth will be similarly equipped.

Menasha Wooden Ware To Build Mill in West

Mowry Smith, president of Menasha (Wis.) Wooden Ware Corp., announces that the firm has finalized plans to construct a 125 ton neutral sulfite semichemical pulp and paper mill at North Bend, Ore. Construction commences soon, with completion in mid-1961. He announced Ernie Manders, with Kimberly-Clark over 10 years, will be manager.

Menasha Wooden Ware has extensive timber and lands in southwest Oregon and owns plywood, lumber mill and wood flour operations at North Bend, Ore. and a corrugated box plant in Anaheim, Calif. The new mill will also use wood residue from the plywood and lumber mills. The new North Bend mill will, in part, supply board to the Anaheim box plant just as the company's Otsego, Mich. mill supplies the Menasha box plant.

Wenner-Gren Pulp Mill Work May Start in 1960

Construction of a pulp mill in British Columbia's Peace River country, north of Prince George, B.C., could start during 1960, if a report now nearing completion indicates its feasibility, according to Bernard Gore, managing director of Wenner-Gren B.C. Development Co., Vancouver, B.C. Axel Wenner-Gren, Swedish industrialist, with associates already has spent $6,000,000 in preparation for a big pulp and power development.

Mr. Gore said that more than one pulp mill has been under consideration for the area planned for development when the Wenner-Gren interests go ahead with the contemplated $500,000,000 water power and related projects.

UNION BAG-CAMP, new building houses machine to run at 3,000 fpm.

PULP CONSUMERS INVADE DIXIE

'Learn About South' Tour

Millions still being spent in expansion, fine white pulps are being made and forest restocking is successful

By ALBERT W. WILSON
Editor, PULP & PAPER

● The Association of Pulp Consumers, whose members purchase a substantial proportion of more than two and one half million tons of market pulp consumed annually in the U. S., toured a half dozen big Southern pulp and paper and woodlands operations in mid-November. They timed their Southward trek perfectly—escaping the first bitter cold snap of the season up North. However, they didn't exactly "bask" in Southern sunshine, of which there was plenty, for they hastened through five busy program-packed days of travel by bus and plane, punctuated with receptions and entertainment.

Presidents, board chairmen, v.p.'s and top purchasing executives of 28 Northern companies which buy pulp had a first hand view of what goes on in the still-expanding Southern pulp and paper industry —whose mills alone are worth over three billion dollars and may draw raw material from 200 million acres of forest lands though owning only 20 million. They saw fine white bleached pulps made and many other signs of progress in a section of the nation where pulp and paper production has tripled since the war, accounting for 70% of the nation's expansion.

The 28 companies which took part in this "learn about the South" pilgrimage compare with 30 such market pulp-dependent companies whose owners and top execs participated in the Pacific Coast pulp mill tour of 1955. There were 25 represented in the Alberta tour of 1957. But, of course, more than 100 other APC member mills are intimately involved in these events and will hear about them from their associates and read about them here.

This year's traveling party comprised 62 persons—members, wives and guests, including the writer. Base of forays into the Southeast pulp world was an elegant hotel, The Cloister, Sea Island, Ga., part of a world-famed resort area, developed by officials and associates of The Mead Corp. This link with Mead, they say in this historic Spanish Main country, is exactly why Sea Island became such a well-managed, high class holiday haven.

The Consumers party, in parts and whole, saw operations in Georgia and Florida, No. 2 and No. 3 states after Washington in pulp production and No. 3 and No. 2 (reverse order) after Wisconsin in papermaking. Also in North Carolina, eighth state in pulp. Buses carried them to Union Bag-Camp, Rayonier, Gilman Paper and Brunswick operations. Company planes wafted them to Buckeye Cellulose Corp., in Foley, Fla., and to Riegel Carolina, near Acme, N.C. Some of the group also made unprogrammed visits to see the gigantic "Seminole Chief," rolling off 1,100 or more tons a day at Jacksonville (St. Regis), world's biggest single producing machine.

Union Bag-Camp: 2,546 Tons in One Day

First "port of call" was the biggest mill in the world, the Union Bag-Camp Paper Corp.'s sprawling operations at Savannah. As though to properly commemorate the Consumer's visit, this mill just the day before—Nov. 15—smashed all production records in its 23 year history by whipping out 2,546 tons of paper and paperboard. This stands as the biggest single day's production of any mill.

Midst the older structures of this company, visitors saw the new brick and concrete structure housing Union-Camp's new No. 7 Fourdrinier machine, which was due to start up before Christmas, adding even more tonnage output. Beloit Iron Works built this machine exactly the same size as Union-Camp's six others—236 in. wide, 220 in. trim. It is to make lightweight paper at an approximate speed of 3,000 fpm thereby allowing the post-war Pusey & Jones No. 6 machine to operate mostly on linerboard and another older machine, No. 2, to run continually on semi-chemical corrugated medium.

Visitors were told mixed hardwoods were being pulped by NSSC process with Bauer refining, prior to washing, and that a kraft hardwood would be introduced for Union grades including linerboard. Thus, this mill, now using over 3,000 cords per day of pine wood, would be using up to possibly 700 cords a day of soft hardwoods, mostly gum, by spring.

James R. Lientz, vice president-production, welcomed the Consumers at a luncheon where he said: "We are the biggest in the world but we always remember we are part of a big industry." Ferdinand R. White, president of the Consumers and also of Union Mills Paper Mfg. Co., New Hope, Pa., thanked Mr. Lientz and his staff. This happened to be the only host company of the tour which doesn't make pulp for domestic sale. Mr. Lientz is also president of TAPPI.

Other hosts were Dr. Harold Y. Charbonnier, pulp and paper division mgr., Dr. Glen Kimble, manager of the technical division, M. M. Hamarat, mgr. box plants, V. E. "Tex" Kelly, mgr. bag plants, Francis W. Kelley, manager of industrial relations, and Kirk Sutlive and Phil Beckwith, manager and asst. to the manager of public relations.

More interesting facts told visitors: Normal production of 2,000 tons a day would cover a 1450 mile highway—Savannah to Denver. Plant payroll is over $27,000,000 a year. Its 35,000,000 bags per day are 15%-17% of U.S. consumption. From 8,000 to 10,000 visitors pass through its gate each year.

To assure adequate wood supply, Union Bag-Camp conducts a 3-point program:

1. Educating farmers in good forestry; 2. economic assistance, including purchase of 70% of its wood, and 3. research for improving and protecting wood species.

Today, with nine mills in Georgia, there is 20% more wood available than there was in 1936, when this was the only mill and made only 120 tons a day.

Everything is in high multiples here, as the Consumers saw. For example, this one mill has 64 Jones jordans, 21 Sutherland refiners, 11 Sprout-Waldron refiners; two Jones DD refiners; four Jones-Bertram Beaters, and two Bauer refiners, seven big General Electric turbogenerators and two Westinghouse high pressure units. It has a single file lineup of 45 digesters—"If we add any more we are going to have to turn the corner!" said Mr. Lientz.

This company has performed an important service to the entire kraft industry by making a big investment in a wide variety of digester linings and alloys, to help find a solution to a costly industry corrosion problem. In a future issue, PULP & PAPER will describe what this company has done, for its own information, but at the same time of great value to other kraft mills.

Rayonier: Land Restocking

Next stop of Consumers' buses was the Glennville, Ga., nursery, which with the Morgan Yulee, Fla., nursery, is a major factor in keeping two Rayonier chemical cellulose mills running in the Southeast. In fact, the Consumers were told only 15,000,000 seedlings were required for planting on company lands this year—down 5,000,000 from last—to assure the annual crop of 6,000,000 trees these mills require. Another 5,000,000 seedlings were given to other woods suppliers. This reduction in planting reveals that Rayonier is over the hump in restocking its Southern lands.

First off, the Consumers were shown an amazing display of the different kinds of machinery which have been developed in recent years for land preparation and planting. Lined up outside the Glennville nursery buildings, were tiller plows and planters, a machine called an Ezee 100 inch Flow Fertilizer Distributor, a special 8-tube seeder, a straw mulcher, a weed control spraying machine and a Hardie fungus controller. This Rayonier program reflects its many years of leadership in forest conservation.

Rayonier owns or leases 610,000 acres in the South. It has decided these are the best methods to carry on its planting program: It plants slash pine, because it is more durable and versatile than other Southern species in the Southeast. By seed, it starts three quarter of a million seedlings per nursery acre. In seven months, the seedlings are removed. They should be re-planted within ten days where they will grow to mature trees.

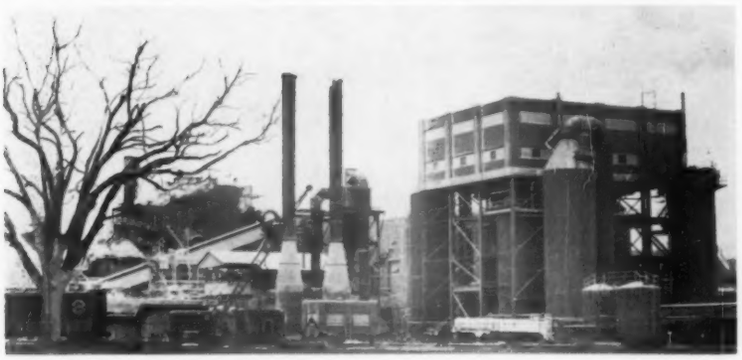
With fertilizer, a nursery area could be seed-planted each year. Without this, a cover crop is planted alternate years—usually soy bean or black-eyed peas. At Greenville, 28 acres are planted.

Rayonier is grafting 500 superior branches a year on trees for the new seed orchard. This scion material—the branches—are shot off choice trees with a gun. It is the quickest and safest way, say Rayonier foresters. Grafted seedlings are enclosed in cellophane, to keep in moisture. And the scion is held to main stalk by rubber bands until the graft heals.

Consumers were shown how Rayonier obtains and stores seed from cones. There are only about three or four good seed years in 10 as a rule, so it maintains a 3-year inventory. In cutting, usual practice is to thin in 15 years, then make a second or final cutting in 25, or, sometimes, a final cutting about 10 years later.

On this tour, the hosts were Ernie Davis, operating mgr. of Rayonier's Southeast Timber Division, Dan McGillicuddy, assistant mgr. of domestic cellulose sales, Bill Miller, nursery supervisor, Bill Henry, forester, Ted Bielfield and Art McCormick, domestic paper pulp sales representatives. Later, at Sea Island, General Sales Mgr. Mike Brown and Southeast Gen. Mgr. Fred Doherty of Rayonier met the Consumers.

St. Marys: Integrated Operations Grow



ST. MARYS, bleach plant in foreground, right.

The next visit was to St. Mary's Kraft Corp., a bus ride to an extreme southern point of Georgia, across a wide river mouth from Florida. This subsidiary of the Gilman Paper Co. was built in 1939. St. Marys is the second oldest town in Georgia and was then best known as a retreat for some of the Carnegies and a burial spot for Arcadians who landed there centuries ago.

The Vermont Gilman papermaking and power enterprises, which celebrate their 75th anniversary in 1960, have created an 800 to 900 ton integrated kraft production plant here which is still growing. Half of this production is in bleached milk bottle and food board. The other half is in bags and specialty papers and market pulp. Up to 200 tons per day of market pulp can be made, and when Consumers were there St. Marys was making pulp sheets for export on its pulp dryer.

A large new converting center of 300,000 sq. ft. was going up. This center will house equipment for multiwall bags, grocery bags and gummed tape. The Savannah bag plant will move to St. Marys when it is completed.

Harold Holden, president and gen. mgr. of Gilman Paper Co., George W. Brumley, vice pres. and gen. mgr. of St. Marys operations, and Bob Bringman, sales mgr., pulp division, were hosts on this trip. Ray Forker, president of Blue Star Steamship Lines, came along to explain operations of one of the major terminals of the world for oversea shipping of ammunition and defense supplies near the mill. This is Kings Bay Terminal, which is leased by the U.S. government to Blue Star. Earth walls, special rail spurs and other safety precautions were explained.

The Kamyr-Ross Engineering enclosed pulp dryer, preceded by two Sutherland refiners and Sandy Hill suction mold and presses, was a point of interest. A 136 in. wide (max.) sheet was passing through the dryer.

Consumers viewed the No. 1-213 in. Pusey & Jones and No. 2-236 in. wide Beloit Fourdrinier machines which operate in parallel, the former on bag and kraft papers and the latter on bleached paper and board. Only four years old, No. 2 machine was completed with a coating station.

The visitors saw all modern brick construction main manufacturing buildings at St. Marys. A 5-stage bleach plant, only five years old, has 350 ton daily capacity. With these stages—chlorination, caustic, chlorine dioxide, second caustic and second chlorine dioxide—this Impco plant was producing brightness of 84 to 90. The Impco washers had built-in exhaust systems. Alongside was the Solvay 4 tons per day chlorine dioxide plant. St. Marys presently has five 12-ton and eight 8-ton digesters of mild steel.

Stock preparation for both machines is by 12 Sutherland refiners, four Jones jordans for No. 2 and two Jones jordans for No. 1. Three Babcock & Wilcox power boilers, one Combustion Engineering bark-burning boiler, three General Electric turbogenerators, one Babcock & Wilcox and two Combustion recovery furnaces were among major units.

Riegel: Giant Carolina Belle Machine

RIEGEL, hewed out of Carolina forest.

Dec. 19 was the eighth anniversary of the Carolina Division of Riegel Paper Corp. and of the attractive woodlands town of Riegelwood, started at the same time as the mill. So here, as at St. Marys, the consumers saw relatively new installations. Of course, its giant Carolina Belle paperboard machine has only been operating since June, 1958.

The Riegelwood development is notable as a company undertaking. Streets are curved, not straight; park areas are built along highways; there is a modern air-conditioned shopping center consisting of five stores, a community center, and various playfields. Fishing facilities are excellent in Riegelwood lake.

The visitors arrived at the New Hanover County airport in Wilmington, N.C., and were taken by bus to the mill, some 25 miles west of the city. After a look at the giant filter plant which filters the 34,000,000 gallons of water used daily by the Carolina Division, the bus continued through the woodyard, around the caustic area, and on to the pulp mill. After a look at the chipper house, the group was taken to the digester floor and the washer room. Here they took a look at the three sets of washers

currently in operation, and from there proceeded to the screen room.

From here the group went to one of the most modern bleach plants. Two separate bleaching operations exist, one for hardwood and one for pine. Each of these has two chlorine dioxide stages. The 5-stage plant consists of chlorine bleaching, followed by caustic extraction, chlorine dioxide bleaching, followed by caustic extraction, followed by chlorine dioxide bleaching. The 6-stage system is similar to the 5-stage system except that a hypochlorite bleaching stage follows after the first caustic extraction stage. Pulp brightness achieved in these bleaching systems is in the 80-90% range.

After observing the drying and shipping operations of the pulp mill, the visitors were conducted into the spacious new addition of the Carolina Division, the home of the Carolina Belle. As papermakers they were especially attracted to the huge Carolina Belle paperboard machine. This machine produces high grade food board for food packaging, drinking and food cups, folding cartons, and special papers for tabulating cards, shipping tags, post cards, filing folders, linerboard, and advertising printing.

The capacity of the new machine is in excess of 300 tons per day of top quality paper. It is a Beloit 236-inch machine with a 226-inch Waldron Microjet Uniflow knife coater.

A Ross Midwest Fulton air drying system operating at maximum temperatures of 300°F and velocities of 8,000-10,000 feet per minute follows the coater, with coating run of about 100 linear feet. This knife coater applies a wide range of coat weights to the board which prints well by offset, letter press, and rotogravure.

The dryer section of the Carolina Belle has an unusually large number of drying cylinders, all with a diameter of five feet. There are 72 paper dryers, 15 felt dryers, and 8 coater dryers. These dryers are totally enclosed under a hood complete with automatic lifting doors, insulated aluminum roof and side curtains, exhaust fans, and exhaust duct work.

Following this tour, the group was feted with a dinner, after which they were shown a part of the 250,000 acres of woodlands which Riegel owns in North Carolina.

Dr. Charles E. Hartford, vice president and general mgr., Carolina Division; J. D. Dailey, mill manager; R. L. Kerridge, vice president-operational services, Riegel Paper Corp.; Winthrop Endicott, sales manager, Carolina Division (recently adding pulp as well as board to his sales responsibility), R. H. Aranow, personnel director, Carolina mill, and others at this Division were hosts.

Buckeye: Bleach Plant and New Units

BUCKEYE CELLULOSE CORP., night operation.

As a result of recent expansion, Procter & Gamble's Buckeye Cellulose Corp. mill at Foley had become a $50,000,000 investment, as seen by the Consumers touring delegation. The new expansion is primarily for bleached sulfate paper pulp, a total of 300 tons per day. The original unit, built five years ago, has capacity for 400 tons of pre-hydrolized dissolving pulp or 500 tons of bleached sulfate paper pulp.

This company is now purchasing about 20% of its chip needs from sawmills. Railroad and truck wood ranges from 40% to 60% in each case. From 10% to 20% of supply is now hardwoods. Interesting to visitors was the arrival of long logs in the mill yard, which are sorted and some sold to sawmills. A giant LeTourneau unit was seen lifting 22 tons of long logs from trucks at each grab, and moving them about the yard. Buckeye owns about 800,000 of timberlands, but cuts only about 20% of its needs, the rest being purchased. Its piney woods, which it bought from Brooks-Scanlon interests (which started Powell River Co. in the west) is one of the largest forest blocks in the Southeast. Buckeye plans 200,000 acres of pine plantations on cutover lands in the next 20 years. Some 90,000 acres of swampland is being converted to tree production.

The five new digesters are Chicago Bridge & Iron's Horton stainless clad units of 4,150 cu. ft. each. Lukens roll cladding is in the nine older digesters, which are holding up well. The absence of corrosion problems in this mill is attributed to meticulous and extensive pre-testing.

For both lines of operations, old and new, there are three washers and at least two screenings, with sometimes three screenings.

When dissolving pulp is made, a prehydrolysis stage precedes the regular cook in the same digesters.

On the dissolving side, the number and order of bleaching stages used vary with grade and end use of the cellulose. As many as ten stages of bleaching, including two optional stages of chlorine dioxide, are used for some dissolving grades. This dissolving bleach equipment is all Kamyr except for the last tower which is Impco. For yarn pulp, 87 to 92 brightness is achieved, but for tire cord, 83 to 88 is sufficient.

On the paper pulp side, the equipment is all-Improved Machinery. There are eight stages: 1, chlorination, 2, chlorination, 3, hot caustic, 4, hypochlorite, 5, either hypochlorite or hot caustic, 6, acid chlorine dioxide with downflow tower, 7, another hot caustic stage, and 8, another acid chlorine dioxide stage with downflow tower. Brightness runs from 89 to 91.

Five Jones Royal jordans are used for paper or tire cord pulp, but not for yarn pulp, ahead of the two Sandy Hill Iron and Brass Works machines, both 184 inches wide. Bauer Cleaners are used, as well as Vortraps.

The new machine, primarily for paper pulp, has 60 dryers, whereas the older machine has 100. The Fourdrinier and press sections are the same. For paper pulp, the trim is 172 inches, but for dissolving, the trim depends on customer needs and may go as low as 144 inches. Each has Sandy Hill selective drives powered by Westinghouse dc motors. Ross Engineering provided air systems for both machines. Each has an air cooler at the end of the machine. On the dissolving pulp machine one big drum cooler by Ross is used. For the new machine, four perforated drums in a new type Sandy Hill air cooler were utilized.

Other new equipment here for finishing include a Lamb Grays Harbor backstand, cutter and layboy with roll winder and bale conveyor, along with a Washington Iron Works hydraulic press and automatic wire tying.

A new 11-story high Babcock & Wilcox 550 tons capacity recovery unit is a major factor in an excellent 95% chemical recovery at this mill. This is the second B&W recovery unit. For power there are two B&W boilers and a bark burning Combustion Engineering boiler. Buckeye converted to natural gas from oil for its main fuel about three months ago. A second Allis-Chalmers line kiln duplicates the original.

Nothing made a stronger impression upon the Consumers at this efficient mill operation than the youth of the mill executive staff. Several visitors commented that they seldom had seen a mill where so many top key officials were so much younger than is normally seen in those positions.

Hosts to the visiting party here were Charles Metz, Buckeye sales vice president, Gil Tougas, manager of Florida operations, Lee Wakeman, plant manager, Charles Felner, quality control supt., P. B. Hare, general production mgr., Bob Cannon, paper pulp sales manager, Mason Williams, industrial relations manager, and James O. Sutherland, publicity coordinator. W. D. Smith is woodlands manager at Foley, and Marshall Courtney, wood procurement mgr. Rex Vincent, technical vice president of Bulkley Dunton Pulp Co., agents for Buckeye, was also on the welcoming committee. Paul Honey, vice president and manager of Buckeye, met the customers the night before at Sea Island. (For more about Buckeye's Foley expansion, see PULP & PAPER, Oct., 1959 issue, page 78.)

Brunswick: Divides Runs on Gum, Pine

BRUNSWICK, Mead-Scott partnership.

One of the final visits was at the Brunswick plant, jointly owned by The Mead Corp. and Scott Paper Co. Built in 1937 as a joint venture to try to obtain bleached sulfate pulp from Southern pine, it proved so successful that the plant has been expanded three times.

Today Brunswick Pulp & Paper Co. turns out an average of 562 tons of pulp per day, with some being shipped overseas on assignment by Mead and Scott.

On hand to welcome guests was E. J. Gayner, III, president and gen. mgr., assigned to the Southern plant by Scott in 1938, and G. K. Singletary, asst. gen. mgr., who also joined Brunswick Pulp in 1938.

Being a "divided mill, Brunswick Pulp runs approximately 10 days on pine and then an equivalent time on gum. The plant now has 11 digesters furnished by the Blaw Knox Co. and M. W. Kellogg Co. Ten of these are brick lined, with one unit stainless lined. The stainless lining was applied by the Alloy Cladding Co.

The bleach plant at Brunswick Pulp was entirely built in 1958, with chlorine dioxide bleaching added. Chlorination takes place in two Impco flow towers. Following the washing stages, the stock is pumped through an Impco thick stock pump into the bottom of a Kamyr upflow tower where the chlorine dioxide is added.

Five television cameras arranged strategically in the washer area give employes in the control room constant watch on performance of the washers down below.

One pulp drying machine is a 156 in. Rice Barton; a second one is a Kamyr 156 in. wet end with an Oliver mold, and using a Flakt dryer.

Brunswick Pulp ships bleached pulp through the inland waterway on Scott assignments and by rail to other Scott plants and to Mead plants.

Eight Plaques Presented By Consumers Association

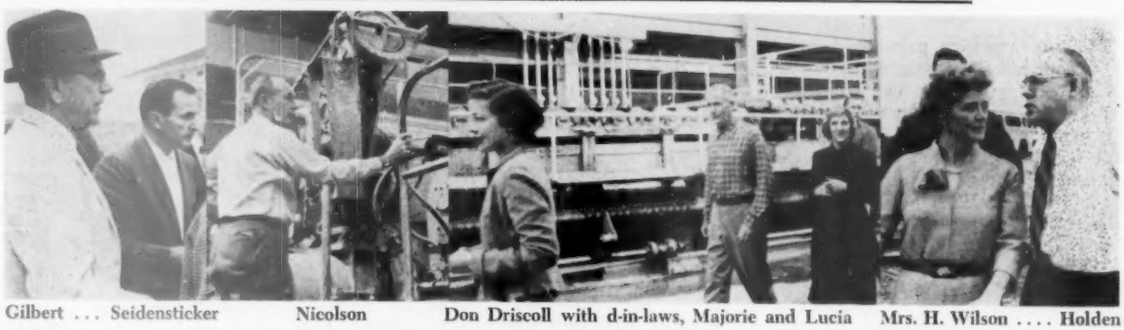
As a souvenir and expression of gratitude for the hospitality shown them in the South, the Association of Pulp Consumers presented eight plaques to their tour hosts at a dinner at Sea Island (the first seven were actually to the companies these men represent; the eighth was a personal award):

Alexander Calder Sr., chairman of board, Union Bag-Camp Paper Corp.; Fred B. Doherty, general manager, Southeast Division, Rayonier Inc.; Harold Holden, president, Gilman Paper Co. and St. Marys Kraft Corp.; Ed. J. Gayner III, president, Brunswick Pulp & Paper Co.; Paul Horey, president, Buckeye Cellulose Corp.; Charles E. Hartford, vice pres. and gen. mgr. Riegel Carolina Paper Corp.; H. Warren Kampf, president, Mead Paper Sales Co. and vice president, The Mead Corp.; Mr. and Mrs. Ralph A. Powers of Sea Island and Montville, Conn.

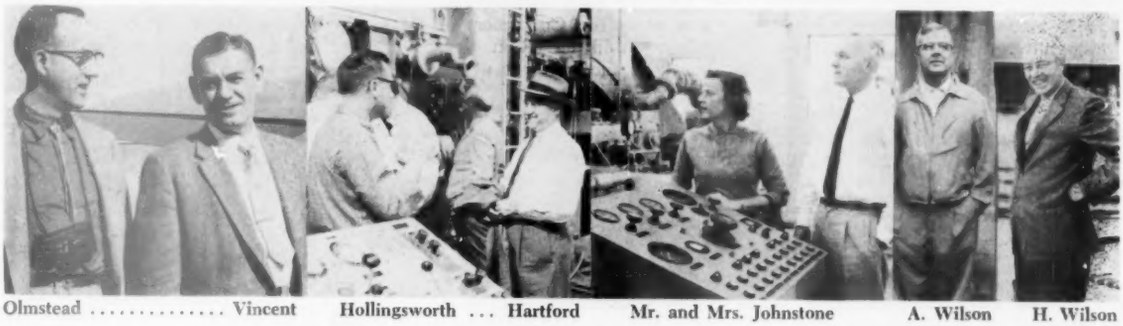
A guest of honor was A. W. (Bill) Jones, president of Sea Island Co. and a Mead director.

Leaders of the Consumers party were the president of their association, Ferdinand R. White (president Union Mills Paper Mfg. Co.), the vice president Ted Gilbert (president of Gilbert Paper Co.), and Reed R. Porter, Consumers executive secretary who made arrangements for the trip assisted by Miss Marjorie Pfancoo, Mr. Porter's secretary. Three past presidents of the Consumers—Don G. Driscoll, The Sorg Paper Co., David Knowlton, Knowlton Brothers, and Samuel R. Sutphin, Beveridge Paper Co., were there.

SNAPSHOTS FROM THE EDITOR'S ALBUM



Gilbert ... Seidensticker Nicolson Don Driscoll with d-in-laws, Majorie and Lucia Mrs. H. Wilson .... Holden



Olmstead ..... Vincent Hollingsworth ... Hartford Mr. and Mrs. Johnstone A. Wilson H. Wilson

Mrs. and Mrs. Lientz ..... Charbonnier Knowlton .. Peterson Whittle Brombachers .... Hollingsworths

White McGillicuddy ..... Davis Sutphin Dunn F. D. Gottwald Jr. .... Carney

MEMBERS OF ASSOCIATION OF PULP CONSUMERS, INC. IN TOUR OF SOUTHEAST MILLS

Following is a list of those on tour.

L. A. Blume, treas. and prod. mgr., John Strange Paper Co.

G. E. Brombacher, Jr., director of purchases, The Mead Corp.

Frank M. Butler, Jr., director of purchases, Albemarle Paper Mfg. Co.

Joseph R. Carney, purchasing agent, Oxford Paper Co.

Douglass Compton, gen. supt., Robertson Paper Box Co.

D. G. Driscoll, president, The Sorg Paper Co.

David A. Driscoll, asst. to vice pres.—operations, The Sorg Paper Co.

Robert A. Driscoll, secretary, The Sorg Paper Co.

George C. Dunn, pres. and secy, Dunn Paper Co.

T. M. Gilbert, pres. and gen. mgr., Gilbert Paper Co.

George H. Glatfelter, gen. supt., P. H. Glatfelter Co.

F. D. Gottwald, Jr., vice pres. and secy., Albemarle Paper Mfg. Co.

C. E. Hartford, vice pres. and mgr., Riegel Paper Corp.

Brumley Bringman ... Hayes ... Blume Butler ..... Cannon Ed Gayner III Metz ..... Mrs. Cannon

H. L. Smith III Tougas Mrs. Nicolson Felner ..... Wakeman H. L. Smith Jr. Mr. and Mrs. Porter

Glatfelter ..... Endicott McCormick Olmstead Powers Compton Mrs. P. Kerridge Mrs. Hayes ..... Mrs. Carney

Kelly Mr. and Mrs. Peterson Bob Driscoll blchman Dave Driscoll Tattersall ... AWW ... Seidensticker B. Driscoll (front) .... H. L. Smith Jr.

James L. Hayes, paper mill supt., Bemis Bro. Bag Co.

Mark Hollingsworth, vice pres., Hollingsworth & Vose Co.

Lewis K. Johnstone, director of purchases, Champion Paper & Fibre Co.

Bartow Kelly, asst. secy., Crocker, Burbank & Co.

R. L. Kerridge, vice pres., pulp dept., Riegel Paper Co.

David C. Knowlton, president, Knowlton Brothers.

L. D. Nicolson, vice pres., Hamilton Paper Co.

Edwin H. Olmstead, pres. and chief eng., Eaton-Dikeman Co.

H. C. Peterson, Jr., vice pres. in ch. special accounts, St. Regis Paper Co.

Ralph A. Powers, president, Robertson Paper Box Co.

N. A. Seidensticker, vice pres. and gen. mgr., Chillicothe Paper Co.

Horace L. Smith, 3rd, purchasing agent, Standard Paper Mfg. Co.

Horace L. Smith, Jr., consultant, Standard Paper Mfg. Co.

Samuel R. Sutphin, chairman of board, Beveridge Paper Co.

Samuel L. Tattersall, Jr., secy.-treas., Union Mills Paper Mfg. Co.

Gilbert A. Weisberger, vice pres., Orange Pulp & Paper Mills.

F. R. White, president, Union Mills Paper Mfg. Co.

F. Howard Wilson, chairman of board, J. C. Wilson, Ltd.

An Emerging Concept of Water Utilization

By DR. JOHN G. STRANGE
President, The Institute of Paper Chemistry

● There is some danger in approaching stream pollution as an isolated subject because whatever we may discuss or decide within this particular area will have a bearing on the general water picture.

We might first acknowledge the fact that the total amount of water in this world is a stable quantity. It is true that we can change its position and availability in given locations, and we can affect its form and quality temporarily, but there is little that we can do to expand or decrease the total supply. The steady circulation of water from the earth's mantle into the atmosphere and back again, or in other words, the hydrologic cycle, is a permanent phenomenon (at least from our mortal point of view) and although we may tamper with this cycle and change its manifestations and effects within given geographies, the universal factors are immutable. It is this proposition of a constant and discernible supply that distinguishes water from all our other resources.

Turning to the United States, it is generally agreed that we have an average rainfall of approximately 30 inches per year. Of this, around 22 inches or over 70% is returned rather promptly to the atmosphere through evaporation and transpiration. The remainder either finds its way into streams and ultimately runs into the oceans, or it soaks into the ground to feed the vast reservoirs which are constantly percolating and moving under our feet.

Our supply of water for agricultural, industrial and civic purposes comes principally from the "run off" and ground water phases of the hydrologic cycle. It is estimated that these amount to roughly 1,200 billion gal. per day or about six times the volume of water we are presently using.

These, however, are average figures and they disguise the fact that water is in extremely short supply in certain parts of this country and that it is becoming scarce in many other areas. These shortages are both qauntitative and qualitative in character and they are caused, in part, by our expanding population, by the growing needs of industry and by modern agriculture's increasing use of irrigation. They are intensified by short-sighted municipal, industrial, and agricultural planning and are compounded by the fact that the quality of our supply has suffered from pollution and siltage.

Although predictions of our future water requirements vary considerably, it is generally agreed that our need for water will at least double within the next 20 years. Of particular importance, however, is the shift which is taking place in water usage. More is required for all purposes, but whereas industry is presently responsible for some 40% of the total use pattern, it probably will account for at least 60% in 1957.

With this in mind we might examine briefly the present industrial water picture and the position of the pulp and paper industry in that picture. It is a rather striking fact that the primary metals industry and the chemical industry are responsible for over one half of the entire industrial withdrawal of water. The paper industry is a poor third on the list, accounting for a little over 13% of the total, and it is followed rather closely by the petroleum and coal products industries. From the standpoint of gross intake alone, therefore, it is clear that the paper industry is an important but not pre-eminent user of water.

Most industries use a lion's share of their water for cooling purposes. The situation is quite different in the paper industry where water is primarily a part of the manufacturing process. As a matter of fact, the paper industry uses more process water than any other industry and quite plausibly, therefore, it treats a higher percentage of its intake. Although I have never seen figures to prove the point, I suspect that the paper industry spends considerably more money on its water supply than other industries.

Taking all aspects into account, therefore, it can be said that the paper industry is more critically dependent on water, and especially, high quality water, than the balance of industry. It is apparent that this dependency will have a more restrictive influence on future expansion than any other single economic or raw material factor.

DR. STRANGE: Unless we recognize and reconcile differences in agrarian and industrial water demand, we "may lock ourselves in, from a technical standpoint."

As one thinks about our national water situation and the various proposals which have been advanced for its solution, he is particularly impressed by the fact that it is only in comparatively recent years that industry has become an important user of water We sometimes forget that our present industrial and urban complexes are quite new, at least from the historian's point of view. At the beginning of this century, industry was responsible for a very small percentage of the water intake. In 1950 the figure was 35%, and, in spite of the prediction which I cited earlier with respect to 1975, industry is still below 50%.

The important point here is that industry's requirements have mushroomed in a spectacular fashion, and there are still too many people who approach the water problem from the perspective of an agrarian society.

Industry's water needs and problems are different from those of agriculture. They are more complex. At the same time, I am convinced that they need not be antithetical, particularly if the subject is approached on

Recommended Reading: Some Things You Should Know About Water, if Your Future is Tied to This Industry

In just the past few years, Dr. John G. Strange has emerged as a leading industry spokesman and protagonist in expounding its rights and responsibilities as regards the costly and controversial stream pollution problem, and he has helped to accurately delineate this industry's stake in the much broader and increasingly critical problem of water supply for the nation.

Because he goes beyond the narrow and familiar concepts of pollution issues, in which most discussions flounder, and brings into focus the broader nationally urgent aspects, his words and his philosophy are important to anyone who lives and works in this industry.

All too often this industry has been backed into a corner on pollution issues, when the argument is waged on sentimental grounds and on only partial aspects of the problem. Dr. Strange has helped the industry in this dangerous position by bringing into the spotlight all the phases of a greater national problem, and in their proper relationship, and on a basis of straight, clear thinking.

His views provide this industry with the armor and ammunition it has long needed. The accompanying article is what he had to say before over 300 industry executives and scientists, government and institutional representatives when he keynoted the Industrial Waste Conference in Chicago on Dec. 1. The meeting was sponsored by the National Council for Stream Improvement.—The Editor.

an over-all rather than a fragmentary basis.

In order to understand the essential differences between agrarian and industrial water needs it is necessary, first, to distinguish between the "consumption" and "use" of water. As we have observed, water is never consumed in the ultimate sense. From a hydrologic standpoint, however, it is regarded as having been consumed when it is sent back to the atmosphere rather than released to the streams or into the ground where others may use it.

On the basis of this definition, it is readily apparent that agriculture is by all odds the largest "consumer" of water and that industry actually consumes very little. Perhaps as much as two-thirds of the water used in irrigation is "consumed," and this is to be compared with an average of less than 10% on the part of industry.

A second important distinction between agrarian and industrial users of water is a qualitative one. It is true, of course, that there are certain kinds of water which are not suited for irrigation, but the limitations of condition and quality are much more severe in the case of industry. And as technology advances, I am sure that industry will become even more dependent on the character of the water it uses.

Third, in most parts of the country the agrarian needs for water are highly seasonal whereas industrial needs are quite steady. This means, among other things, that industry's needs are more predictable and correlatively, that any substantial impingement on a continuous supply will have disastrous consequences.

Summing up, an agrarian economy is primarily interested in the transporation and storage of water for its timely use, or perhaps we should say consumption. An industrial economy is more demanding in that its requirements are continuous, and they involve the concepts of quality and re-use, as well as positioning and storage.

In our community, state and national approaches to the management and development of watersheds and river basins, it is imperative that we recognize, and reconcile, these significant differences. Unless we do, we shall not use our water supply effectively, and we may "lock ourselves in" from a technical standpoint.

As industry emerges as the principal user of water, it automatically assumes several important responsibilities, two of which have particular meaning. These are the prudent and effective handling of the water which it takes in, and reasonable treatment of the water which it releases. Exactly what constitutes prudent use, on the one hand, and adequate treatment of the discharge, on the other hand, are not easy questions to answer. It is necessary to develop standards, or bench marks and these will vary in different parts of the country and among industries. They will be influenced by the character and commitments of the streams or bodies of water involved, and they will be governed, of course, by technological and economic considerations.

The paper industry has made rather good progress insofar as prudent use is concerned. Our intake per ton of pulp or paper produced has gone down dramatically in recent years, and today we stand second among all industries in the percentage of water which we reuse or recycle. This would seem to be an outstanding achievement, especially since most of our water is used for process purposes.

The significance of recycling is brought home when we realize that if the principal water-using industries did not recirculate any of their intake, they would need approximately twice as much water as they are now using. Obviously, any further progress in this direction is important to the effective use of our national water supply.

Industry's responsibility for the condition and quality of its discharged water involves three major considerations. These are, (1) the protection of public health; (2) maintenance of wildlife and recreational facilities; and, (3) suitability and cost of released water to subsequent users.

Most of what we read or hear about discharges is concerned with the first two, namely, public health and wildlife. And, historically, there is considerable justification for this. Without intending to minimize either of these two matters, however, I am persuaded that the future will disclose that the real problem, and the most complex one, is the third—or the suitability of discharged water for use by others.

The issue of public health is straightforward. Certainly any discharges which clearly and actively threaten public health should not be tolerated. The relation of industrial

discharges, or an kind of pollution, to wildlife and recreation is much less straightforward because it is often approached subjectively and therefore emotionally. In spite of this, there is really little controversy over certain broad principles.

The spread of municipalities and industrial areas has stimulated an almost universal concern over the integrity, and preservation of wilderness areas. Shorter working hours and longer vacations have released an increasing number of refugees from smog and urban congestion to the countryside and recreational spots. One does not have to be a sportsman or a naturalist to understand the importance of conserving these facilities. Any really sensitive person appreciates the ethical and spiritual implications and knows, therefore, that there is more at stake than public playgrounds.

In our dedication to these causes however, we should not impose measures and restrictions on agriculture and industry which are more severe than nature ordinarily imposes on herself. And in certain instances this has been done. We should also, it seems to me, avoid the fallacy of a kind of philosophical dualism which separates mankind from the "balance of nature," because he is actually a part of that balance and should be regarded accordingly.

In short, our efforts to improve the compatibility of nature with the effects of an urbanized, industrialized society should proceed in accordance with programs and regulations which will not exceed existing technical abilities or unduly jeopardize the competitive status of those involved.

This leads to the third aspect of discharged waters—their suitability for subsequent users.

Underlying these problems is the doctrine of multiple use which was eloquently stated by Justice Oliver Wendell Holmes when he said: "A river is more than an amenity. It is a way of life that must be rationed among those who have power over it." In other words, it is both unreasonable and improper to limit a given waterway to a single use.

A stream should contribute its service to as many phases of the surrounding economy as it can, and those who enjoy its services are obliged not to create conditions which will unduly impair the quantity or quality of the water for use by others.

Now, it is one thing to profess the doctrine of multiple use, and it is still another thing to put it to work. Generalities are often frustrating, and their implementation ordinarily requires the development of more precise definitions, supported by a working body of knowledge. Further progress in the complementary use of water will thus depend substantially on technical advancements and the exchange of experiences, both within and among industries and other pertinent bodies.

Whenever one is confronted with a complex, diversified set of relationships, he seeks the least common denominator, or some kind of symbolism, which will enable him to attack the broad problem on a rational basis. It seems to me that this is possible, at least tentatively, in the case of multiple use. For example, we might imagine a segment of a river with only two important users of water, one of them being farther upstream than the other. This gives us a situation with three components, namely, the first user, the river itself, and the second user. Each of these components has certain requirements to satisfy, and each has a responsibility to the others. There is, in other words, a three way partnership involving what might be called a reciprocal and dynamic relationship.

The first user may find it necessary to improve the river water by treating his intake. This is a responsibility which he assumed when he located his plant on this particular site. His upgrading of the water is quite temporary, however, because by the time he releases it he will have added something or changed its character in some way. Here we are faced with the need for precise information on the nature of these changes or additions. This information must, in turn, be related to the stream. And, if the stream is to be an active partner in the progression, we must know as much as we can about its capabilities for self-regeneration, as well as the needs and types of its aquatic life.

The second user now comes into the picture. Very likely the water which he receives is different in some respects from the water which was available to the first user. Some of these differences may have been caused by the effluence of the first user, and others may have been caused by the stream itself.

What is the responsibility of user No. 1 to user No. 2 ? And, is it not conceivable that user No. 2 may have certain retroactive responsibilities to user No. 1? We have, in short, an interesting circular relationship, and our problem is to establish the relative obligations of the three participants.

If we lift our sights from this particular segment of the river, we will find our "least common denominator" repeated many times. The second user now has a relationship to the third user, the third user to the fourth user, and so on, with the stream continuously participating as the third party in each triad. Borrowing an expression from geometry, we can picture a sort of cycloidal progression with a built-in feed back. Perhaps we might call this the "cycloidal progression theory of complementary use."

In closing, I would like to back away from the doctrine of multiple use and touch briefly on the paper industry's unusual position on the national water scene.

Although it is true that the total supply of water is a more or less fixed quantity, there is a great deal that can be done to increase the effective supply. Multiple use can be a tremendously important way of accompanying this, but it is only one way. Obviously we must do a better job of intercepting precipitation and equalizing the run-off. And this involves more than the building of dams and reservoirs. It involves, above all, intelligent land measure because land management and water management are really two sides of the same coin.

The future of the pulp and paper industry is substantially dependent on the protection and extension of forest lands. And forests, it is well known, are one of the most effective covers insofar as minimizing soil and water losses are concerned. Most observers would agree, I am sure, that the paper industry has made tremendous strides in recent years in its forestry practices.

Today the industry owns and operates nearly 50,000 square miles of forest lands, and it is both interesting and pertinent to observe that average run-off from these lands amounts to more than seven times the volume of water that the industry presently uses or withdraws in its manufacturing processes.

This means that our role as a supplier of water is even more important than our role as a user of water, and we take our place at the public water trough not so much as a seeker but more as a provider. The corollary to this is that we have a particular concern with this country's evolving water policies, and it is incumbent on us to play a prominent part in the many discussions and studies which will eventually shape these policies.

Problem: Water Conservation

Solution: Appreciation of water's role in the well-being of industry and public alike, its uses and its treatment

By DON W. ZEIGLER
Midwest Editor, PULP & PAPER

• Pulp and paper has a vital place at the public watering trough—not as a user of water, but as a supplier important to the industrial and public welfare. John G. Strange, president of the Institute of Paper Chemistry, Appleton, Wis., has called on the North American industry to fully recognize its essential role in solving a problem: The growing needs for fresh water.

Dr. Strange spoke at the opening session of the recent Pulp, Paper & Paperboard Industrial Waste Conference at the Edgewater Beach Hotel, Chicago. Joint sponsors were the National Council for Stream Improvement Inc., The Institute of Paper Chemistry and the Sulphite Pulp Manufacturers' Research League.

So important to the vitality of the pulp and paper industry are the water utilization views expressed by Dr. John R. Strange at the recent Chicago conference that PULP & PAPER has published the text of his address elsewhere in this issue.

Addressing the more than 300 men and women attending the national meeting, George E. Dyke, chairman of the board of governors of the National Council, recounted the many millions of dollars that have been devoted to the problem of stream pollution by the pulp and paper industry alone. The Institute and other groups, he said, have devoted 15-20 years to study. The National Council has expended $3,500,000.

Cooperation: the Moving Force

Without cooperation within the industry and between the industry and private and public agencies, Mr. Dyke declared, the widespread effort to combat the water conservation problem would have died aborning. But, he warned, cooperation is not enough. This industry must (1) understand the basic problem; (2) talk about what's been accomplished—not what remains to be done, and (3) know what it's talking about.

Attending the two-day meeting were state and federal stream pollution control officials, university and college researchers and industry executives and technical specialists. Several public office holders—including a New York State mayor—represented non-industrial interests. They heard top scientific authorities review the most recent research progress and practical tested methods for reducing stream pollution and improving water conditions for aquatic animals through treatment and utilization of pulp, paper and paperboard mill wastes. In describing this history-making conference, the National Council for Stream Improvement had this to say: "Due to the comprehensive nature and breadth of the program, it will in effect constitute a short course in pulp and paper industry water pollution abatement."

Dissolved Oxygen Vital

Dissolved oxygen is the most important problem facing the pulp and paper industry, according to Dr. Willis M. Van Horn, who listed other problems as (1) toxicity and (2) inert solids. Dr. Van Horn is chief, biology group, The Institute of Paper Chemistry.

He discussed the various sectors of the industry. For kraft he had this to say: "The general character of kraft mill waste has been improved. . . . If kraft mills are properly designed and operated, toxicity is not too important." In the sulfite mill, he pointed out, the killing agent is lack of oxygen—not toxicity.

Dr. Van Horn served as chairman of the session on aquatic biology. Other speakers included Dr. F. E. J. Fry, dept. of zoology, Univ. of Toronto, Canada, and Dr. Herman R. Amberg, project leader, Crown Zellerbach Corp.

Temperature Change Cited

For the most part, fish are hardy members of the animal kingdom, Dr. Fry told his audience, but there are conditions that must be controlled to maintain the "normal environment of the stream." Discussing requirements for aquatic habitat, he listed rapidly fluctuating temperature as the most important killer of aquatic life.

No North American streams exclude fish because of extreme temperature, he said. The average for the composite river system is 50° to 80° F. (For many of the experiments conducted in this phase of the study, the goldfish represented the hardy species, while trout and salmon were used as controls at the other end of the survival scale.)

Dr. Fry pointed out that on the average 4-6 parts dissolved oxygen per 1,000,000 represents the ideal condition, with 5 parts per 1,000,000 adequate for the vast majority of North American streams.

Free carbon dioxide, he said, does not seem to be too important in the overall view. Good fauna are associated with less than 2 parts per 1,000,000, a condition that seems to be fairly general in all river systems tested.

Turbidity in itself does not seem to be harmful to fish, the zoologist continued, although the clearer the water the better the fauna. Turbidity must reach 1,000 parts per 1,000,000 before harm is recorded; but, this is not the direct result of the turbidity per se. Harm seems to result solely from the fact that food is not produced when light is cut off.

Size Sometimes Misleading

Size of river flow is sometimes misleading, according to Clarence J. Velz, chairman, dept. of environmental health, Univ. of Michigan. Although flow is the most important aspect of the assimilation of wastes, he said, drought possibilities must be taken into consideration. In other words, the amount of water available might be more than adequate 11 months of the year but far from adequate during the twelfth. This possibility is easily overlooked, he warned, in planning a plant location.

GEORGE E. DYKE, chairman of the board of governors, National Council for Stream Improvement: "Cooperation is not enough."

DR. HARRY W. GEHM, technical advisor to the National Council: "Removal, thickening, dewatering—all important steps."

G. K. DICKERMAN, technical director, Consolidated Water Power & Paper, discusses experimental operation at Wisconsin Rapids.

River capacity depends altogether on the hydrologic situation: climate, run-off, character of the river basin and water temperature (which on the average equals the long-term air temperature). Having much influence on the assimilation abilities of any given stream is the physical characteristic of the channel—whether it is deep and slow or shallow and fast. There is no short cut, Professor Velz declared, to measuring assimilation capacity. It requires intensive and systematic samplings.

Ponds: Advantages, Disadvantages

Discussing "Stabilization Basins and Use of Natural Hydrographic Features," Herbert F. Berger pointed to economy as the big advantage of ponding. With the exception of maintenance, he pointed out, practically no labor is necessary. He is a member of the staff of the National Council.

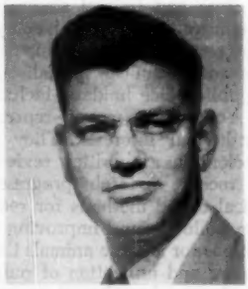
On the other hand, Mr. Berger declared, the disadvantages are these: (1) necessity for a large acreage; (2) good control; (3) mosquitoes; (4) 10- to 15-ft. depth requirement; and (5) need for supplementary air.

Conference Quotes

Dr. H. Heukelekian, dept. of sanitation, Rutgers Univ.: "Studies show assimilative capacity is greatest in stretches of the stream that are heavily polluted by man-made wastes."

Ralph H. Scott and **Theodore F. Wisniewski,** Wisconsin Committee on Water Pollution: "Aeration of stream flow through hydro-turbines can be expected to function at better than 20% oxygen exchange efficiency."

Dr. S. A. Zieminski, assoc. professor, Univ. of Maine: "With a horizontal rotary aerator, it was possible to dissolve 1 lb. oxygen with an energy requirement of 0.13 kw-hr, while with the vertical separator this requirement was 0.17 kw-hr. These requirements are both considerably below those reported in waste treatment and stream aeration literature."



AVERILL J. WILEY, technical director, Sulphite Pulp Manufacturers' Research League, discusses utilization, by-products and marketing.

J. M. HOLDERBY, mgr., Lake States Yeast & Chemical div., Rhinelander Paper Co., chairman of conference's concluding session.

Dr. Willis M. Van Horn, The Institute of Paper Chemistry: "Because of its uniformity in nature and because of great variation in natural factors, pulp and paper mill wastes are not usually significant in the biology of migratory (esturarian) fish populations."

Dr. Harry W. Gehm, technical advisor, National Council for Stream Improvement: "If the 69 cu. yds. that result from the settling of 1 ton dry suspended solids can be concentrated to 50% solids, resultant volume would be only 2.4 cu. yds. Such dewatering not only enhances land disposal, but opens up other possibilities such as incineration, wet combustion or the atomized suspension technique for complete disposal."

Russell O. Blosser, National Council: "These approaches to utilization that utilize liquid sludges probably offer most promise, since high-degree dewatering is avoided. Burning of some mill sludges in conventional sludge-burning equipment appears possible."

G. K. Dickerman, Consolidated Water Power & Paper Co.: "The technology for evaporation and combustion of calcium base liquor is well developed but operates at a loss except in areas of high fuel cost. Capital cost may be prohibitively high. There may be advantages in quality and flexibility in the pulp mill under certain conditions to justify changing to magnesia or soda base."

Dr. Richard W. Brown and **Dr. Donald T. Jackson,** Hammermill Paper Co.: "Increased use of neutral sulfite semi-chemical pulping process by mills not having a kraft mill through which spent cooking liquor can be recovered depends, to a large degree, on development of a successful independent semi-chemical recovery process."

Averill J. Wiley, technical director, Sulfite Pulp Manufacturers' Research League, and **J. M. Holderby,** mgr., Lake States Yeast & Chemical div., Rhinelander Paper Co.: "Four out of seven alkaline pulp mills now recover fractions to yield marketable by-products. One in six acid sulfite mills process substantially all spent liquors for by-products, and expansion projected for 1960 may increase processing capacity to one-quarter of total production of spent sulfite liquor in the U.S."

Will Reduce Bleach Losses in 1960

By LOUIS H. BLACKERBY
Pacific Coast Editor, PULP & PAPER

● The West Coast industry sees opportunity for these production improvements in 1960:

Bleaching costs will not only be reduced, but characteristics of products will be improved. Better, more economical coating will extend applications. Forest and woodlot harvests will be more fully and effectively utilized. Major overall benefits will come through better utilization of "personnel resources."

These concepts—well beyond the "crystal ball" stage—were featured at the fall meeting of the Pacific Coast div., Paper Industry Management Assn. (PIMA, formerly APPMSA) Dec. 3-5 in Seattle.

Main reason for pulp degradation in the bleach plant can often be traced directly to the chlorination stage, says E. Paul Duncan, technical service supervisor, Western Chemical div., Hooker Chemical Corp. Strength losses and color reversions can take place in this stage if optimum conditions are not maintained for temperature, retention time and mixing.

To minimize chlorination-stage quality losses, "it is necessary to redesign equipment so retention time can be varied from about 15 to 60 min., or more, to compensate for effect of temperature on reaction rate. It is also necessary to provide initial continuous turbulent mixing over a period of 3 to 5 min.," Mr. Duncan stated.

He proposes a "5-minute design" for achieving needed control functions. This includes improved water injection of chlorine, improved stock line mixers and a 5-min. tower with turbulent agitation. Several multiple-tower arrangements were suggested for subsequent retention, permitting time control to compensate for seasonal temperature changes. He emphasized that "proper installation of a redox control system is of paramount importance because operation of the entire bleach plant is dependent on optimum operation of the automatically-controlled chlorination stage."

Impact of research and development on industry growth during recent years was pointed out by A. Hugh Wickett, supt. of kraft and semi-chemical mills, Weyerhaeuser Co., Longview, Wash. He cited his firm's NSSC mill as "a very important part of our integrated operation, which has furthered the Weyerhaeuser pursuit of complete forest utilization."

As result of mixing brown liquor with kraft black liquor prior to evaporation, evaporator efficiency in the NSSC plant diminished 30%. Analysis of scale in the tubes disclosed that hardwood fiber created the problem. It was solved by using brown liquor as kraft digester diluent in place of black liquor. This resulted in returning evaporator capacity to normal.

In pumping cooked chips from blow tank to the refining section, the line repeatedly plugged. Pressurizing the receiving header, changing location of star feeder and making minor line alterations solved this problem.

Mr. Wickett reported, "our kraft mill operates for long periods of time without saltcake addition, as the sodium sulfate equivalent contained in recovered liquor from the NSSC operation is adequate for mill make-up requirements."

King Hamilton Forkner

GLEN KING, Crown Z, West Linn, is new PIMA Pacific Coast chairman. FRANK HAMILTON, Simpson Paper, retired as chairman. HARDIE J. FORKNER, Inland Empire Paper, was elected third vice chairman. LOUIS PUMPHREY, Westminster Paper, and HUGH WICKETT, Weyerhaeuser, moved up to first v.p., and second v.p. BURKE MORDEN, Morden Machines, continues as sec.-treas.

Kutchera Ries

International Brotherhood of Migratory Peddlers at their Wake-Em-Up Breakfast, initiated a new honorary member, RALPH KUTCHERA, who is chief engr. of Rayonier's NW Central Engineering Div., Hoquiam, Wash. CHET RIES, General Electric, Seattle, officially welcomes him into the brotherhood.

Managing People or Plants?

Jack Frost, management div., Weyerhaeuser Co., questioned whether the industry is managing its "human resources" as expertly as in-plant "technical resources." Regardless of facilities in the mill, "it's how the employe works that controls production activity . . . management of people is essentially the main job."

Luncheon speaker Maxwell D. Bardeen, president of Simpson-Lee Paper Co., Vicksburg, Mich., said it behooves anyone in a responsible position to equip a successor.

"Better maintenance control and economy can be achieved by inventories, better records and codes and standard nomenclature," said Theo. R. Wolf, consultant.

R. J. Seidl, head of research for Simpson Timber Co. and member of a seven-man cultural exchange group visiting Russia recently, says the U.S.S.R. has vast quantities of forest resources occupying huge land areas. Trees are small, and woods-to-mill transport involves much longer distances than in North America. Development of better machines and equipment is an institute function.

Pulp-paper production is low in Russia, but the current seven-year plan calls for increasing the 2,900,000 tons annual output to 4,000,000 tons.

Coating: Trend to Combination

Geo. L. Booth, Dilts div., Black-Clawson Co., said coating applications are increasing, particularly as a result of the modern blade coater; and even this newcomer will be considerably improved before becoming universally accepted for single-coat application. Such achievement, Mr. Booth declared, may be 5 to 10 years away. He forecast a trend toward combination coating roll and blade for paper, air doctor and blade for paperboard.

Keynotes Economy, New Equipment

Canada reports pulping properties of poplar and birch, new techniques in sulfidity control, demisting, causticizing

Jacksonville, Fla., U.S.A. ● Always a meeting of worldwide import, the TAPPI Alkaline Pulping conference had an even more international flavor than usual this year. Representatives streamed into Jacksonville's glistening new Robert Meyer Hotel from as far away as Australia, Tasmania, Japan, Colombia, Finland and Africa.

The conferees were hardly disappointed. Discussions were top caliber. Many sessions played to "standing room only" crowds, and perhaps up to 300 persons attending each meeting. Registration topped 400.

A canvas of delegates indicated a great deal of interest in topics such as the use of sulfuric acid to control kraft liquor sulfidity, effects of pH on bleaching and new reports on pulping hardwood, a subject hot in the Southern United States now.

Chairman of the meeting was Jack McK. Limerick, res. mgr. of Canada's Bathurst Power and Paper Co., Ltd. He was ably assisted by the new chairman, Dave Wetherhorn, tech. director, Continental Can's Southern Paperboard Corp., and Robert (Bob) Fuller, quality services director, Gulf States Paper Corp.'s Tuscaloosa mill and secretary of the pulping committee. Steve Kaptain and Eric Rice, both of St. Regis at Jacksonville, directed the local arrangements and R. E. (Bob) Collins, manager of Crossett Papers' No. 2 Mill, headed up the semi-chemical session, always a special feature.

Intense interest was centered on a report by G. W. Legg and J. S. Hart of the Pulp and Paper Research Institute of Canada concerning the pulping properties of poplar and birch. It was part of the Chemical Pulping division's overall program of research into increasingly important hardwoods.

The investigation confirms previous findings indicating that the pulping rate of hardwoods increases with increasing sulfide and effective alkali charge. Among the facts uncovered: There is an upper limit of sulfide charge beyond which no increase in pulping rate or pulp quality is realized. The maximum rate, it was reported, remains the same regardless of the amount of effective alkali used, while the sulfide contributes less to increasing the rate as the effective alkali is increased. High alkalinity of the liquor, low sulfide charge and lower cooking temperature have an adverse effect on the pulp quality.

Pulping rates of poplar and birch are very similar, said Mr. Legg. Regardless of variation either within the same wood species or between the two hardwood species, wood constituents are removed during cooking in constant proportion to the amounts present in the original wood.

This study also indicates that variations within the species account for greater differences in pulp quality and pulping properties than any other processing variable studied.

Sulfuric Acid for Sulfidity Control

It is a well established fact, according to J. N. Swartz, Bowaters Southern Paper Corp. tech. dir., R. C. MacDonald, control supt. and P. C. Hambaugh, lab supervisor, that wood chips digested in hot alkaline liquor will produce pulp with increasing strength and yield at decreased cooking times as the percentage of sodium sulfide is increased from 0 to 20 to 25% range.

The level of this sulfidity has, in the past, been controlled by operating conditions. At Bowaters, however, sulfuric acid is used to maintain liquor sulfidity at a desired level and to increase the sulfidity of kraft cooking liquors. Its use grew from the need at Bowaters for a simple system to provide sulfur for burning spent liquor from a cold caustic operation. Stream pollution and economics also were primary considerations.

Economically, sulfuric acid plays a big role. Current round figure costs show chlorine to be the top dollar chemical in the mill with caustic soda close behind. Salt cake, soda ash and sulfur follow with sulfuric acid at the bottom of the list. In a mill where chlorine manufacture produces excess caustic, and assuming 140 pounds chlorine per ton of kraft pulp, about 87 pounds caustic per ton of kraft is produced. It has been estimated that this caustic could be produced for $35 to $40 a ton, a substantial savings if used as kraft mill makeup with sulfuric acid as sulfidity control. Savings are further enhanced if other pulping methods such as cold soda for hardwoods are in operation.

Bowaters' hardwood mill started early this year with spent liquor returning to the kraft mill weak black liquor system. It was proved through tests that sulfur to compensate for recovered hardwood liquor is not only being supplied but sulfuric acid is being effectively used to gain an increase in sulfidity. Although used more to assist an overloaded causticizing system than for pure quality control, it was pointed out that without the sulfuric acid system, the hardwood mill could not operate because it would overload pollution control equipment.

Need pH Control in Hypo Bleach

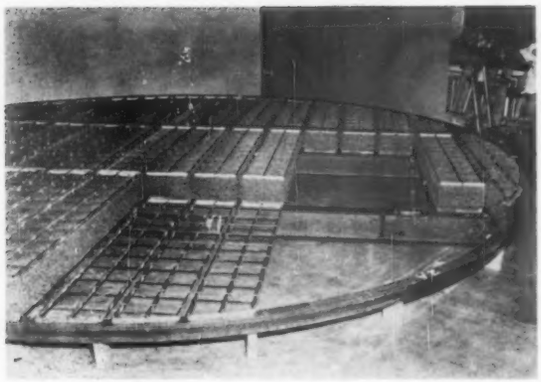
A lengthy study by Champion Paper & Fibre's director of pulp manufacturing, M. G. Lyon, and assoc. research engineer, A. C. Salisbury, indicates the necessity for careful control of pH in bleaching with hypochlorite because its effects vary depending on what stage bleaching is considered.

It was determied that it is necessary in all hypochlorite bleaching stages to keep the pH above pH 8 for optimum bleaching results. The effect on brightness, hot alkali solubility, viscosity and permangenate number varies from stage to stage in a six-stage system using chlorine, hypo, caustic, hypo, caustic, hypo sequence.

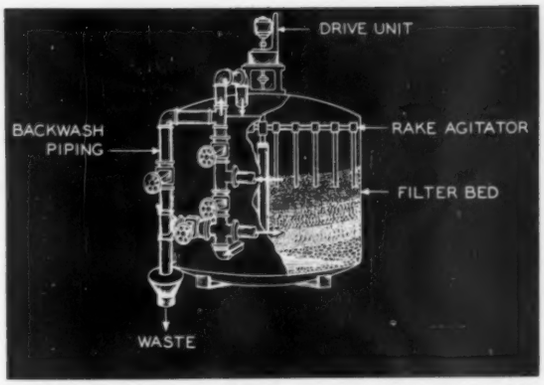
Tests showed effects of pH in the hypo stages, were close but not identical; temperature has little effect on pH-viscosity relationship; brightness seems to be affected more by applied chlorine and heat than by pH; brightness affected by oven fading increases as pH decreases but it, too, is affected by chlorine and temperature.

N.C. Pulp's Mesh Pad Separators

Removal of entrained mists from vapor streams is particularly pressing in operation of multieffect black liquor evaporators.



USED EFFECTIVELY at North Carolina Pulp Co., these York Mesh Demisters were installed on all bodies of a six-effect evaporator system. Droplets from vapor stream collect in wire mesh then fall back into liquid while mist free vapors rise through pad.



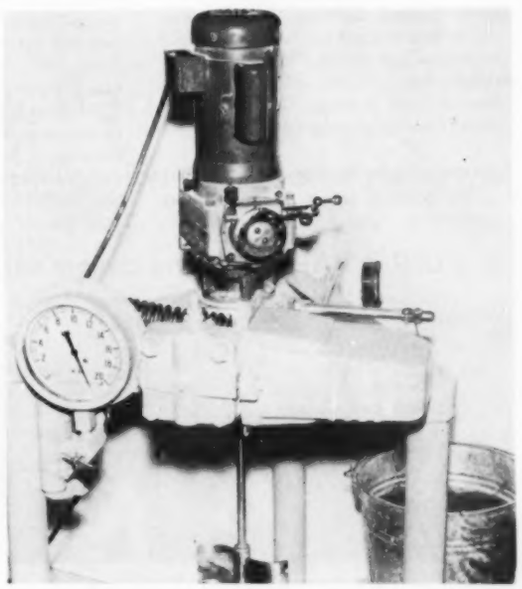
AUTOMATION, SIMPLIFICATION, NEW PRODUCTS are the trends in causticizing, says Dorr-Oliver's Dan Gillespie. Typical of type equipment being developed is the white liquor polisher shown here. It removes all solids, gives brighter white liquor for bright pulps.

At North Carolina pulp, York Mesh Demisters were installed on all bodies of a multiple effect evaporator system, the first such installation to include all bodies on a Southern wood system. The pads were installed in the vapor space over a boiling liquid so that all of the vapor must pass through many layers of woven wire mesh. Droplets carried by the vapor steam collect on the wires where they agglomerate until they possess sufficient mass to overcome the vapor velocity and fall back into the liquid while the mist free vapors continue on through the pad.

Interest in the pads was stimulated by the poor operation of North Carolina Pulp's No. 4 evaporators, according to Chief Chemist H. D. Jurgensen of North Carolina Pulp Co. and H. E. Jacoby and H. G. Lankenau of Chicago Bridge & Iron Co. Condensate soda losses were exceeding one pound per ton and a short period of only 12 days between boilouts was causing a loss in overall capacity.

Some advantages of demist pads:

1. Low first cost investment.
2. Normally no extensive modification to existing equipment required.
3. No additional direct horsepower required.
4. Do not usually require change in method of operating equipment on which installed.
5. Used satisfactorily on all effects of evaporators concentrating black liquor from Southern wood pulping.
6. No maintance requirements during first year of operation at North Carolina.
7. Increased operating time between boilouts.



PULP CONSISTENCY can be measured by sight using this consistency tester. The agitator mounts on a thrust ball bearing on dynamometer stand. The moment arm is attached to a pneumatic, differential pressure transmitter which transmits signal to a 3 to 15 psi receiver gauge. The gauge supplies a numerical value proportional to the torque produced.

Pulp Consistency at a Glance

A new type consistency tester which gives a direct reading of good accuracy was described by Container Corp. of America's Claude L. Rucker, Jr., tech. supervisor at Fernandina Beach, Fla., and staff technician Jerome Lancaster.

The tester enables accurate reading of the consistencies of thick pulps, 3% and above, normally difficult to test accurately by conventional methods. It uses a variable-speed ELB agitator made by Chemineer, Inc. Consistency is determined from a calibration curve of actual consistency versus torque measurement of agitating pulp.

In order to overcome loss of torque with time of agitation, stock temperature, stock refining and sample volume variables, it was suggested that torque be measured after three minutes of agitation. Calibration curves corresponding to the point of sampling should also be used. Agitator blades should be covered and a standard size sample vessel should be used.

Use of this equipment permits testing of pulp consistencies between 3.0 and 4.5% in about three minutes, accurate to .1% Equipment used: Chemineer ELB agitator, set at a speed of 7; Dynamometer stand with transmitter and gauge to measure torque; Impellers (6 in. dia.) two blade on top, four blade below using 2 in. blades; 12 quart bucket for sample vessel and a 9¼ in. high platform. The 12 quart bucket is filled to seven inches with stock. This covers the top impeller about ½ in. Stock is agitated three mins. Record torque measurement as indicated on the receiver gauge and stock temperature. Convert the torque measurement into % consis-

tency, using calibration curve corresponding to the point of sampling. Add .04% consistency for each 5 deg. F. of stock temperature over 100 deg. F. Report to nearest .1%.

How N. C. Pulp Defibers Pulp

"At North Carolina Pulp Co.," said Pulp Mill Supt. J. F. Keyes, "we were looking for a unit to simplify procedures, reduce horsepower requirements, prepare pulp for better use of disc refiners, reduce maintenance.

The answer: Impco Solvo Fibrilizer, a perforated plate fastened to a highly modified pump impeller rotating in a pump case. Invented by Sture Wicksell of Stockholm, Sweden, this rotor, installed in a vertical position at the base of a vat or tub, proved an excellent broke and pulp disintegrator. Fiber particles are drawn apart by centrifugal force without damage. The impeller draws them through the plate holes; coarser material cannot pass.

The unit is used for both high yield and semi-chem pulps. Time-consuming adjustments of disc refiners are not necessary on startups. The Fibrilizer delivers uniform pulp in one pass.

Causticizing in the Future

The general trend in continuous causticizing said Dorr-Oliver's Dan Gillespie, who with W. Christiani and R. P. Logan authored a paper on causticizing, is toward simplification in equipment design and operation.

Future plants, said he, will include automation to improve process control with less operating labor and supervision. Plant design improvements will feature compactness, better opportunity for good housekeeping.

"Through continued attention to sources of chemical losses, alert operators have been able to achieve recovery efficiencies of over 99% on soda and 97% on lime," he concluded. Some of the ways in which new equipment has helped:

1. Revision of dregs washers to use unit compartments rather than trays, thus increasing soda recovery from green liquor dregs; 2. Two-stage slaking system which uses a primary slaker between the kiln and classifier thus eliminating need for hot lime elevator, green liquor heater and reburned lime bin and substituting equipment which levels out kiln surges and reduces maintenance; 3. More efficient clarifiers with deep feedwells making it possible to increase design overflow three and four times normal rates; 4. A new type tray clarifier which has been proved in the sugar industry and requires no feedbox—it uses two opposing feed streams and the feed is automatically divided between the compartments by a vertical concentric-type feed distributor; 5. A polishing filter which enables removal of all trace of suspended solids and produces an exceptionally clear white liquor for high brightness pulps.

Thumb-Nailing Other Reports

Use of a metal mist eliminator by Nekoosa-Edwards Paper Co. enabled them to overcome alkali losses averaging $68.90 a day. Loss was due to entrained green liquor droplets within vapors issuing from the dissolver tank vent stack of a new recovery unit. The knitted metal mist eliminator, made by Metal Textile Corp., recovers nearly all the previously lost material and the value of green liquor chemicals recovered alone exceeded the cost of the installation in three months.

A generally discouraging report on the pulping of small diameter slash pine was made by J. C. McKee of Union Bag-Camp at Savannah, Ga. Although pulping characteristics are generally similar to normal size wood, relatively low tearing strength of the pulp from small stems was seriously unfavorable. Also harvesting of small stems is economically unattractive, Mr. McKee reminded.

PULP & PAPER's roving camera catches Alkaline Pulping's speakers, delegates

Hart McK. Limerick Wetherhorn Fuller

JOHN S. HART, of St. Lawrence Corp., with Alkaline Pulping committee: JACK McK. LIMERICK, DAVE WETHERHORN, ROBERT FULLER.

Jurgensen Link

BEFORE SESSION North Carolina Pulp's H. D. JURGENSEN, who discussed mesh pad separators, with Vanderbilt's BOB LINK.

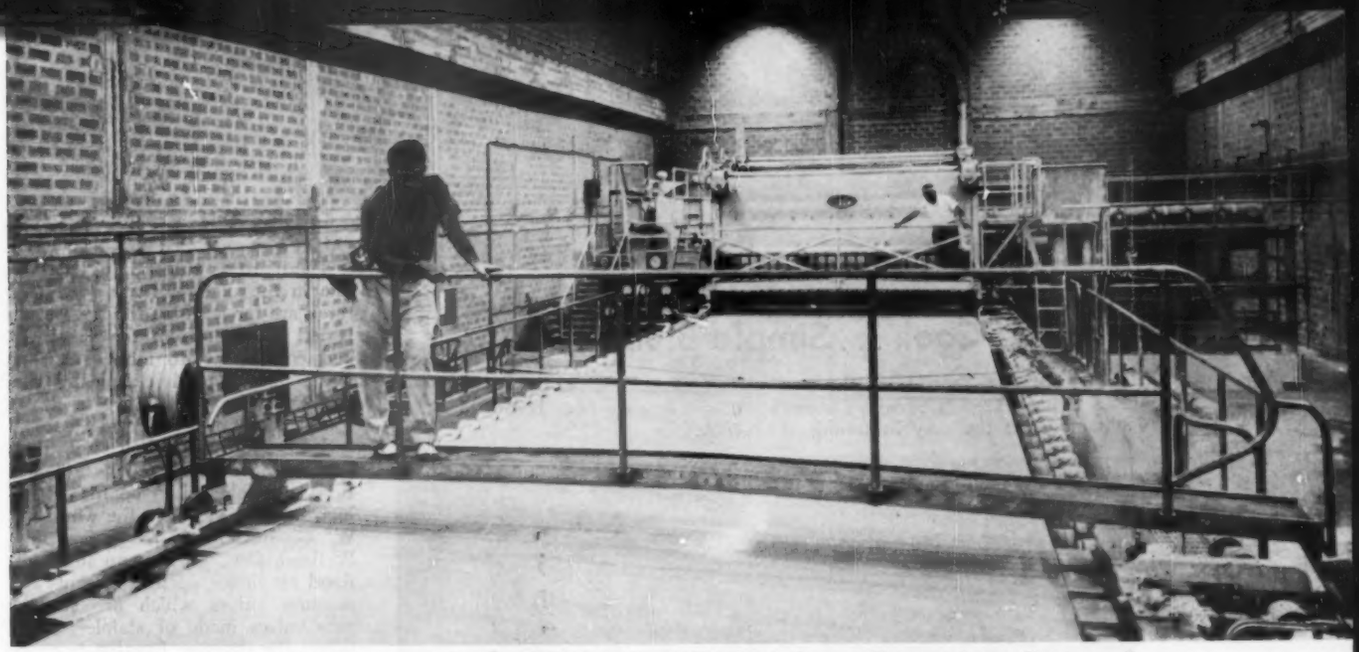
Bridgeford Friederich Rockwell Fursman

HENRY FRIEDERICH, JOHN ROCKWELL and LEWIS FURSMAN of Buffalo Forge, talk to FRANK BRIDGEFORD of Fibreboard Paper Products.

G. W. LEGG. Spoke on hardwood pulping.

Low Phinney

JIM LOW, of National Assoc. of Manufacturers, banquet speaker, warms up on Container Corp's ROBERT PHINNEY.



INSPECTING 100% BAGASSE SHEET as it forms on 158 in. wire at Técnica Cubana mill are assistant director and chief engineer of the project, Joaquin de la Roza Jr. (foreground), son of process inventor, and Jerry Carey (rear), American paper mill superintendent.

ON-THE-SPOT REPORT FROM CUBA:

Newsprint from 100% Bagasse

For the first time, a complete report on Tecnica Cubana—first newsprint mill successfully using 100% bagasse

By **WILLIAM F. DIEHL, JR.,**
Southern Editor,
PULP & PAPER

Cardenas, Cuba

• Técnica Cubana, the world's first paper mill designed to produce newsprint from 100% bagasse, is located here—a burro ride from Veradero Beach, one of the most glamorous of all Caribbean ports of call, and just 80 miles from Havana.

Oddly enough, however, part of the history of this project can be traced back to the United States Government. In 1952, faced with the severe newsprint shortage, the U.S. Congress requested that the Dept. of Commerce investigate the feasibility of making newsprint from bagasse.

Using the facilities of the government printing office and the Bureau of Standards, this investigation was made. On Oct. 1, 1952, then U.S. Secretary of Commerce Charles Sawyer claimed that the "de la Roza process produced a paper equal to wood newsprint in all specifications."

The de la Roza process is the development of Joaquin de la Roza, Sr., a native Cuban, born in Matanzas some 30 miles from where Técnica Cubana is located. Well known in the paper world, Sr. de la Roza had worked on the perfection of his process for more than 30 years in U.S., Cuba, Peru, Mexico and other cane sugar countries. With him was his son Joaquin, Jr., engineering graduate of Cornell University (U.S.A.) and a former amateur ice hockey player.

Based on success of the U.S. investigation, Técnica Cubana S.A. was incorporated to construct a mill to produce bagasse newsprint in Cuba. Offices were opened in Havana and engineering was begun on the mill in 1955. Its president was Cristobal Diaz, vice president of *El Pais,* one of Havana's most widely read and independent newspapers. Treasurer of the company was Guillarmo Martinez-Marquez, editor of *El Pais,* president, in 1957 of the Inter-American Press Association and for many years staunch supporter for a newsprint industry for Cuba.

The mill was completed and on-the-line in mid-1958 and the first salable newsprint was used in editions of *El Pais* commencing Sept. 16, when a front page box announced that Técnica Cubana was a success.

The mill is located adjacent to Central Progresso, one of Cuba's older sugar mills, owned by Arechabala Co. Its president, Fermin Iturrioz, began his career as a clerk in the office, took over the company during the depression when others avoided the job, has made it Cuba's second largest rum producer and a large sugar producer.

Based on the production of bagasse (the fibrous residue of sugar cane) from the Central Progresso zone, Técnica Cubana was designed for an optimum production of 100 tons a day, with provision for expansion to 300 tons per day.

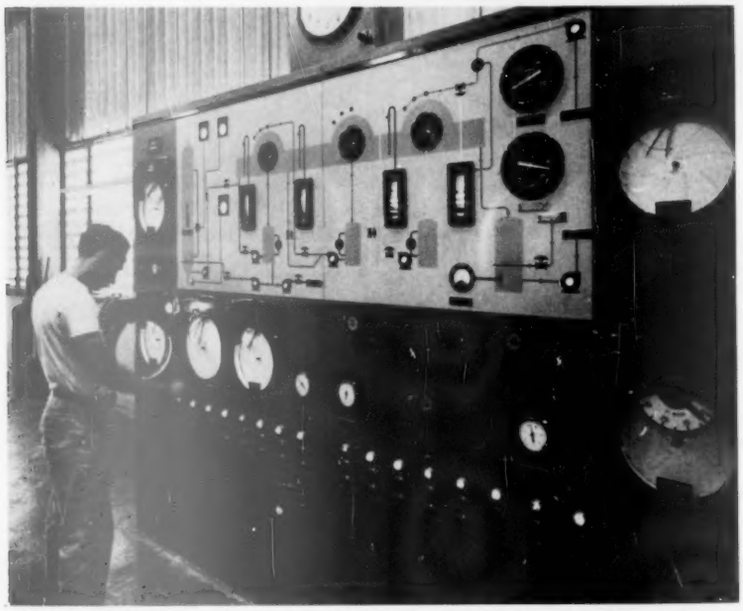
The success of this venture provoked Mr. Diaz to predict a bright future for the production of newsprint in Cuba. Some sugar mills could support 500-ton-a-day paper mills, if desired, and there are a substantial number which could support 200 tons a day mills. There is actually enough bagasse produced in Cuba to support three-and-a-half million tons of bagasse newsprint a year.

Técnica Cubana by early 1959 was producing an average of some 40 tons a day and had increased to 65 tons per day by February 1959. Its top monthly production in February was 1,035 tons. The sheet produced from bagasse pulp is actually considerably whiter than groundwood newsprint. One American newspaper asked if it were possible to "yellow the sheet a bit" because American newspaper readers were used to a less white paper in their daily newspaper.

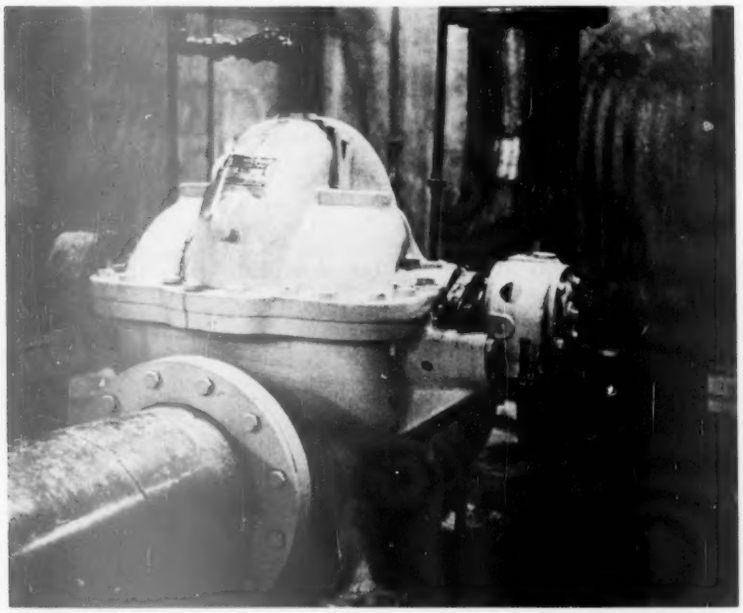
NEWSPRINT FROM BAGASSE . . .

2-Stage Cook . . . Simple Bleaching

The patented "secret" of the two stage process used at Técnica Cubana actually is at the very beginning of the process. It lies in the pre-treatment of the bagasse fiber before the kraft cook.



ONE OF GRAPHIC PANELS in Cuban mill is this Foxboro board in the brown stock washing and bleaching room. One operator can control entire bleaching washing operations from this panel. Each separate department in mill is as fully automated as possible.



PREVENTING CONTAMINATION, most pumps in the stock system are stainless steel Ingersoll Rand/Egger pumps, especially designed by Emile Egger of Cressier, Switzerland. This washer pump is an example.

There are six tumbling digesters in line in the digester house. The first three are for leaching the bagasse. It is fed to them from the surge bin and cooked for 40 minutes in live steam and special chemicals. The digesters were built to De la Roza's specifications by Bethlehem Steel Co. and are 2400 cft. carbon steel. They are equipped with 48 in. 300 psi Rovalves, believed to be the largest high pressure valves in the world (by W. G. Rovang & Associates, Inc., Portland, Ore., U.S.A.). An Ingersoll-Rand air motor opens and shuts the pressure valves which are straight gate valves made of stainless steel. When the digester Rovalve is open, the pre-treated bagasse is blown into a 48 in. blow line and is delivered into a second surge bin.

From the surge bin a flight conveyor feeds the fiber into the second three digesters where it is subjected to a kraft cook with gas-off and other modifications to account for cooking the bagasse in tumbling digesters. Cooking liquor is supplied automatically by draw-down and refill instrumentation.

The kraft-bagasse cook lasts three hours after which pulp is blown into a standard kraft blow tank 65 ft. high with ¾ in. plate steel, rolled and fabricated by the Pittsburgh Des Moines Co. The tank is equipped with an Impco agitator and has a home-made tramp iron trap at the bottom to catch gravel, stones and other impurities. Note: Bagasse should be stored on black-top or concrete stands to prevent picking up dirt, stones and other such materials from the ground.

Special SS stock pumps developed by Emile Egger & Co. S.A. (Cressier, Neuchatel, Switzerland and obtained from Ingersoll-Rand) are used throughout the process. From the blow tank pulp goes to three Impco

EASE OF BLEACHING is apparent in this picture of pulp before and after single bleaching pass and through bleach washer.

8 by 10 ft. countercurrent, brown stock, washers. The wash cycle is controlled through a graphic Foxboro control panel using conductivity instruments which insure completeness of washing. Only one operator is needed in the wash cycle.

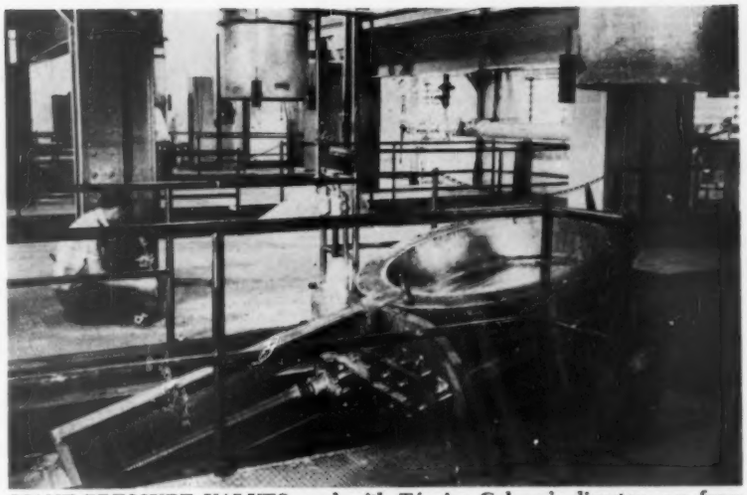
A 12-ton tile-lined stock storage chest for insurance is between the washers and the tile-lined, two-in-series Impco 14-cut flat screens with stainless steel plates. Vats are bronze and the outflow is tile. The screens, which were formerly at Brunswick Pulp & Paper Co. (U.S.A.), are the only secondhand equipment in the mill. From the screens, pulp is thickened from .4% to 4% consistency on an Impco decker and stored in a 34 ft. low density tile-lined storage chest.

Bleaching is Simple

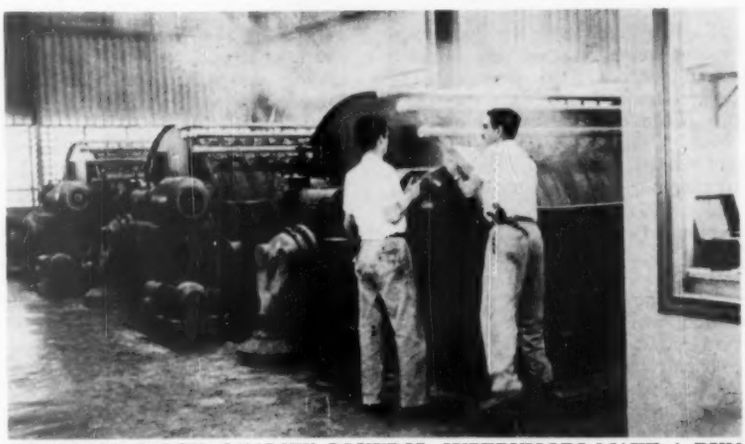
The storage chest actually acts as a surge chest prior to bleaching since it is necessary to control over dry consistency to get uniform bleach. A DeZurik consistency regulator controls the pulp to 3½% consistency as it flows to the bleach system and Foxboro flowmeter gives basic oven dry volume for use of bleach operator.

After passing over an Impco thickener where it is dewatered, the stock is delivered to a standard Impco bleach mixer where plain calcium hypochlorite is measured in by a Foxboro automatic flowmeter. Bleach is also a one-man operation, using a graphic panel.

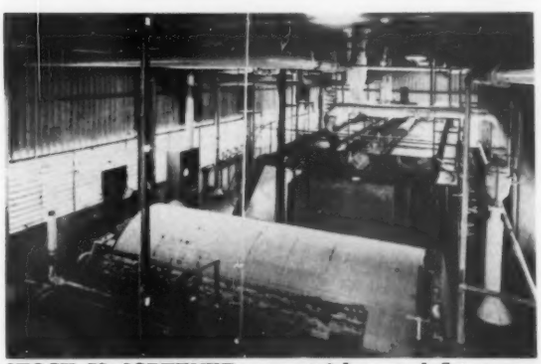
From the 44 ft. bleach tower, where it is retained for two hours, stock is pumped to an 8 by 10 ft. Impco washer which utilizes water from blow heat recovery (the last stage brown stock washer also uses blow heat water). The bleached stock, at 65 to 70 G.E. brightness, is then stored in a 14 ft. 6 in. high density bleach storage chest 34 ft. high.



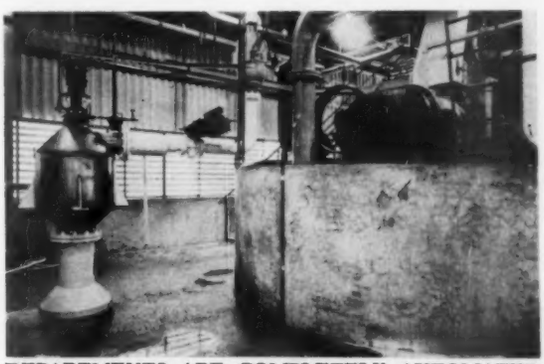
GIANT PRESSURE VALVES used with Técnica Cubana's digesters are from Portland, Ore., U.S.A., plant of Rovang & Associates. Here is a 6500 lb. stainless steel gate valve installed on Bethlehem Steel tumbling digester.



CHECKING STOCK, QUALITY CONTROL SUPERVISORS MAKE A RUN on brown stock 8 by 10 ft. Impco standard countercurrent vacuum washers. Bleach washers are located on the same floor but have tile-lined chests. Third stage washer, at rear, uses hot water from the blow heat recovery system.



STOCK IS SCREENED over stainless steel flat screen here, then thickened to 4% consistency on Impco decker in foreground. One man operation on floor above and by means of Foxboro instruments (left) and flowmeters (on line at right).

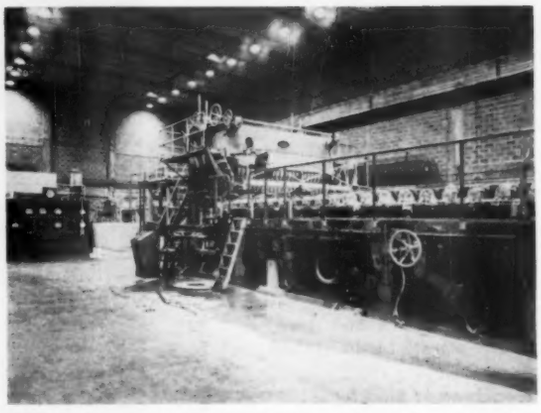


DEPARTMENTS ARE COMPLETELY AUTOMATED although flow from one department to next is not instrumentally integrated. Here DeZurik (Millspaugh) consistency regulator controls continuous flow of stock to bleach washers through flowmeter.

NEWSPRINT FROM BAGASSE . . .

Stock Prep, Machine are Well Automated

CHECKING SAVEALL IS ONE MAN OPERATOR of stock preparation department. It is located just ahead of machine on same floor.



EXPANSIVE MACHINE ROOM with stock preparation ahead of 158-in. Rice Barton machine seen in this picture. Inlet is by Valley Iron Works.

Stock is received in the stock preparation room continuously and is mixed with a fixed percentage of broke, size and alum in a mix chest just ahead of the tile-lined machine chest. Using DeZurik (Millspaugh Ltd.) consistency regulators, stock coming out of the machine chest is maintained at 3½% consistency as it is pumped into the stuff box.

A DeZurik stock valve controlled by Foxboro beta ray basis weight gauge controls the flow into 20 Bird Dirtecs washers and over three 3-A Bird screens. From there pulp goes to open-type Valley Iron headbox.

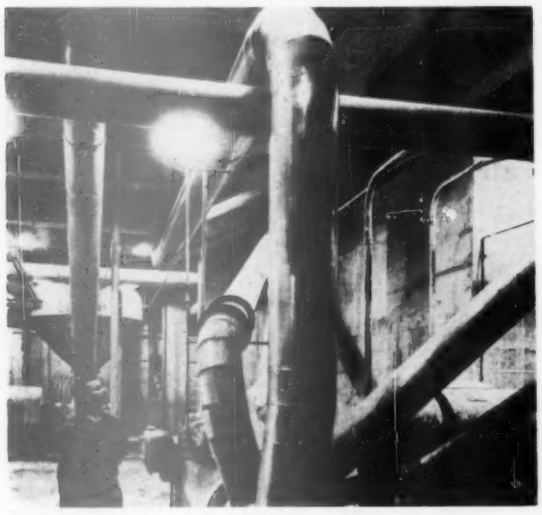
The Fourdrinier is a 158 in. Rice Barton machine with suction couch, suction first and second presses, smoothing press, forty 60 in. dryers and is equipped with Reed standard vacuum pumps. It is lubricated with a Bowser oil system and serviced by a 30-ton Whiting crane with a five ton auxiliary speed hook attached. The differential drive has an 800 hp Westinghouse prime mover turbine.

The machine hood was fabricated by Técnica's personnel from a drawing supplied by C. J. Merrill in Portland, Me., U.S.A.

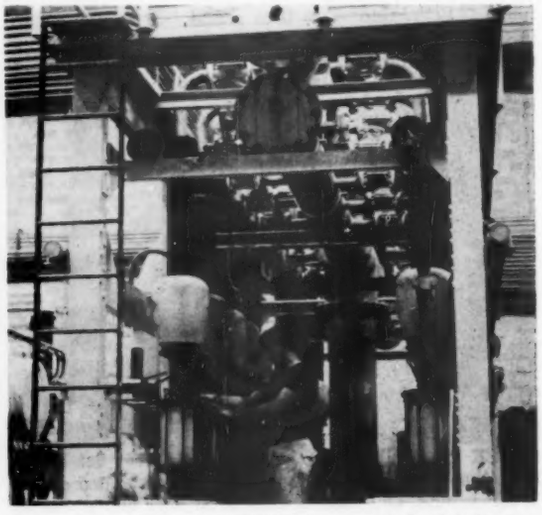
Designed for 1,500 fpm, the machine has an 8-roll calender stack and Pope reel and a Rice Barton winder. A Rice Barton Dynapulper is located under the calender stack and returns broke to the white water chest. A 9 ft. 6 in. Impco saveall serves the machine chest.

Rolls from the winder are delivered to a Rice Barton spiral wrapper located in-line with and adjacent to the rewinder. Once wrapped the rolls are ejected to a header and simultaneously weighed by Fairbanks-Morse scales. A Jeffrey lowerator is used to drop them to the lower floor for inspection and storage.

The first run of Técnica Cubana newsprint by the newspaper, *El Pais*, on Sept. 16, 1958 was made using normal inks at normal speeds. The brightness of the sheet was G.E. 78 (68 in U.S. Bureau of Standards report) as compared to normal newsprint brightness of about 69 (59 in U.S. Bureau of Standards report) G.E.

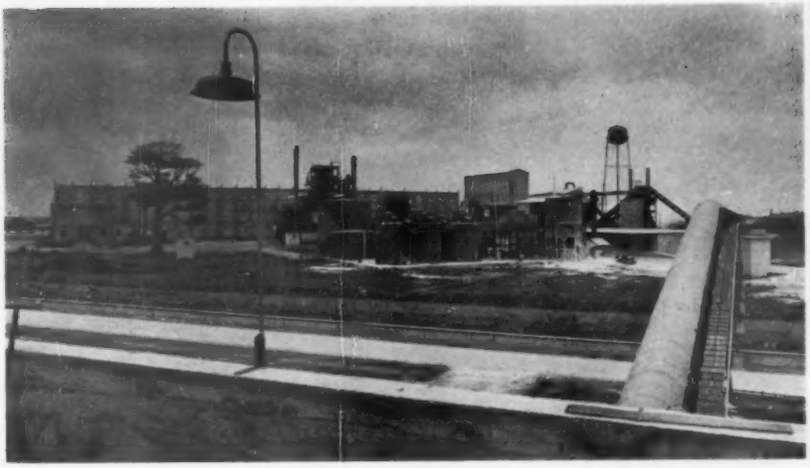


SPIDER WEB OF STAINLESS under machine shows extent of its use. Pulp mill use is extensive also.



CLEAN STOCK IS ASSURED by use of 20 Bird Dirtecs washers.

How Bagasse Is Handled



FROM CONCRETE HOPPER, straight line conveyor 800 ft. long carries bagasse to mill in background. Corrugated steel covers are necessary to protect bagasse from the wind. At end of this conveyor, bagasse drops into surge bin, the last stop before the cook. Surge bin with screw conveyors in bottom was made in Técnica Cubana's amply provided machine shop, as were special items.

Recovery

Significant is the fact that Técnica Cubana boasts the first bagasse recovery unit. The Combustion Engineering unit will recover 10,000 lbs. of black liquor solids an hour and is equipped with a Buell Electrostatic Precipitator. With it is a VU55 oil firing power boiler. A 4,000 kw double-extraction condensing turbine rounds out the power system.

Técnica also features the first bagasse causticizing plant as well as a Graver hot lime zeolite boiler feed water processing plant. The causticizing equipment is Graver with Foxboro instrumentation. Included are a green liquor clarifier, slaker, classifier, three stainless causticizing tanks, white liquor clarifier, two mud washers, one dregs washer with storage tanks, 18 by 30 ft. tanks for white, weak and green liquor. Green liquor flow to the slaker is controlled by Foxboro magnetic flowmeter.

A Syntron gravometric feeder feeds lime from the lime kiln to the slaker. The causticizing operator and assistant also handle batch preparation of hypochlorite bleach liquor, which is pumped continuously to the bleach plant from a concrete hypochlorite storage tank.

Hough Payloaders handle all clay, salt cake and other chemicals which are stored in bulk in a special building. Chemicals are weighed going into and coming out of this building over a Fairbanks-Morse Print-O-Matic. Chlorine is stored in tank cars.

Joaquin de la Roza, Bagasse Pulp Pioneer

Born in Cuba in 1892 of Spanish parents, Senor de la Roza Sr. was educated in the U.S.A. He graduated in 1916 from Cornell University with a degree in mechanical engineering.

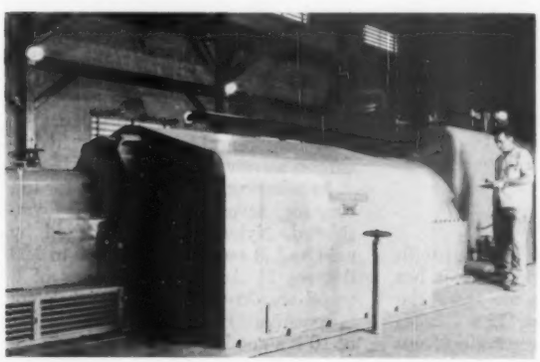
Returning to Cuba, he directed the construction of two sugar mills. In his spare time he continued his study of chemistry which he had begun at Cornell and laid the groundwork for research on sugar cane cellulose. Eight years later he received patent No. 1,782,869, now known as the prehydrolysis process.

In 1925 he erected a bagasse pulp pilot plant at Central Tuinucu in Cuba, where he developed his process for producing a uniformly purified cellulose up to 98.3% alpha cellulose at low cost. He reports that cellulose produced by this process was converted into every then-known cellulose product by leading companies and he has letters from these companies which attest to the high quality of the products.

INVENTOR OF PROCESS used at Técnica Cubana, S.A. and one of mill's founders is well-known in industry—Joaquin de la Roza, Sr.

Senor de la Roza has also developed a horizontal chemical continuous digester, first patented in 1934. It has since been improved and he expects to market it soon.

In 1958 he built the first 100% bagasse newsprint mill at Central Progresso in Cuba. The mill was producing more than 60 tons/day of high grade newsprint for use by Havana and other Cuban newspapers when it was nationalized by Fidel Castro. Senor de la Roza is now in New York engaged in several projects for bagasse cellulose and paper mills. None of these mills are contemplated for Cuba.



INTEGRAL PART OF POWER SET-UP in this 4,000 kw Westinghouse double-extracting, condensing turbine. Recovery unit is by Combustion Engineering.

PAPERMAKERS WATCH as fine point of synthetic felts is explained by Dr. Dan B. Wicker, vice pres. and director of research and development, Huyck Felt Co.

PROBLEMS ARE PONDERED in final panel discussion session before Workshop is adjourned. Here, Dr. Dan B. Wicker explains some problems in shell marking.

Papermakers Learn to Make Felts Last Longer at Workshop

● A secret which Marco Polo stole from the Chinese has become at once a blessing and a problem to modern day papermakers. The secret: Lifting of the paper from the mould by couching it against a wet felt. But there is a tremendous difference in the design, quality and size of today's felts and also, in today's paper machines.

The wet felt used on these big machines must be able to couch, transfer, support, dewater and cushion the newly formed but still fragile wet web. It must be tough, durable and stable; must resist wear and must be economical.

On some of the industry's giant paper machines, a suction transfer felt costs between $2,000 to $3,000 and, with today's high speed operations and use of chemicals, the felt may last from only two days to an average of two weeks. That is why papermakers want to learn as much as possible about felts and why felt manufacturers want to know about papermakers' problems.

In 1957 Huyck Felt Co., prompted by such motives, introduced its popular Felt Workshops. To date, 16 Workshop sessions have been held with approximately 350 papermakers attending. Soon after the 1959 schedule was announced, the classes were booked solid for the year. A PULP & PAPER editor attended a 1959 class to see why papermakers are giving up three days of their already heavy work schedules to attend.

Workshop Program

Each workshop session is prefaced by a get-acquainted dinner the preceding night. The curriculum begins on a Wednesday morning with a plant tour to see how felts are made and extends through Friday noon exercises where diplomas are awarded. There are full work schedules each day, with coffee breaks when students and "faculty" exchange ideas. The evenings are devoted to relaxation, but as one papermaker remarked, "There's more paper 'made' at night than we make in our mill."

The sessions give much time to synthetic content wet felts, which Huyck says have some advantages over 100% wool felts. Chemically, they are more inert, are not susceptible to bacterial damage and are much more resistant to heat damage, alkali attack and wear. At present only two synthetics have a large volume of use: Dacron and nylon.

A little synthetic goes far, the Workshoppers learn. The preferred blends for wet felts, says Huyck, contain 15% to 30% synthetic because additive properties contribute most in this range. Above 50%, there are complications. Huyck is experimenting on 100% synthetics. One property of wool not duplicated by synthetics is 'fulling.' But synthetics are more resistant to deteriorating effects than wool and are preferred in the warp of felts on hard pulling machines. A disturbing phenomenon about synthetics is the tendency of the nap to grow hair—to get longer in early days of use. This limits use on certain grades. In general, synthetics are used less frequently on finer grades.

Hair Shedding Remedy

Hair shedding is not new but with the upgrading of all products it has become a problem in some areas, the workshops brought out. The sources are either loose fibers remaining from felt manufacturing or breaking of the fibers due to normal wear. Remedy: pre-condition the felt by removing loose hairs and modify felt construction and fiber content to minimize fiber loss as felt wears. Paper mills can also help reduce the hair problem. Relatively high-speed brushes or low-vacuum cleaners ahead of calender stack are two methods used.

Chemical Treatments Improve

The first chemical treatments date back to 1920, the workshop disclosed. These were single purpose treatments such as Huyck's present day for mildew resistance and Rez for size stability. With the development of Huyck's 4-D treatment, a truly all-purpose treatment was available. The 4-D treatment resists bacterial and chemical attacks, plugging, stretching, and wear. Huy-5 treatment is a new tool for better felt performance. It is also an all-purpose treatment with all of the outstanding characteristics of 4-D plus natural color.

There were lessons in felt cleaning. Factors which influence the need and frequency of felt cleaning are: type of felt; type of stock; furnish additives; machine set-up and water conditions. Because of different conditions encountered in each mill, a washing formula custom designed for each machine is recommended.

Four basic chemical cleaning principles used are:

1. Emulsification and wetting—detergents.
2. Dispersion and suspension—detergents and dispersing agents.
3. Reaction—acids and alkalies.
4. Solution—chlorinated and hydrocarbon solvents.

In selecting chemical agents for felt cleaning, several facts should be considered. Nylon can be damaged by acid and at temperatures of 80 to 120 degrees F. Acid concentrations of 3 to 5% should not be exceeded. Wool is sensitive to alkali attack and a pH of 10 is a good maximum.

Two felt cleaning systems are used widely: Continuous and shutdown cleaning. But any system should be designed for the maximum load. Chemical cleaning needs time and long felt travel is helpful. Shutdown cleaning requires 15 minutes.

Huyck has been using a Beta Ray Gauge to measure the water removal efficiency of presses. This fast and accurate check has been used on 40 machines in 30 mills throughout the United States. It has also enabled operators to position suction rolls and boxes for optimum water removal.

Says India Must Triple Paper Capacity: Asks Fixed Prices So Can Build Reserves

By DR. J. C. AGGARWALL
(Special to PULP & PAPER INTERNATIONAL)

Bombay . . . In his presidential speech at the annual meeting of Indian Paper Mills Association in Bombay on Oct. 26, H. P. Singhi said the non-availability and the prevailing high prices of the common varieties of paper were purely temporary factors.

Criticism against the industry in this respect was unfair, particularly as the industry had maintained its selling price as low as possible despite increases in costs and had tried its best to help bona fide consumers obtain paper at reasonable prices.

It was common knowledge, Mr. Singhi added, that the benefit of the alleged high sale prices did not go to the mills, because the ex-mill prices and the distributors' margin were fixed, and the distributors had been instructed to charge the authorized prices.

A lasting solution to the imbalance between supply and demand was to increase the production by setting up new units and expanding existing ones, he said. In the meantime, he felt, both educational institutions and government departments should practice economy in white printing paper. He urged educational institutions not to revise text books for two or three years. That would enable other consumers to obtain their normal requirements.

Mr. Singhi said that the production of paper and board reached the peak figures of 253,011 tons in 1958 against 210,126 in 1957. Similar increase was recorded in the installed capacity, which was now 268,800 tons. The ratio of production to installed capacity was about 93% for the first time in the history of the paper industry. He felt that the industry would be able to maintain the progress and achieve the Planning Commission's estimated output of 350,000 tons by 1960-61.

He said it was essential for the industry to aim at an annual production of 700,000 by the end of the Third Plan. For this it was necessary to increase the installed capacity to 900,000 tons. The government should fix 50 tons as the minimum economic limit for a unit for the pulp and paper industry and issue licenses accordingly. Smaller units could not run as integrated plants.

He suggested that an additional capacity of at least 2.5 lakh tons of newsprint be installed during the Third Plan period. He hoped that as steel would be increasingly available in the coming years and in view of the heavy expenditure incurred by the industry on the import of plant and machinery, the manufacture of these items would receive the immediate attention of the engineering industry.

Mr. Singhi asked the government to fix a price that would provide for building up of adequate reserves so that the industry could expand. He promised full cooperation in the implementation of the government's decision on the fair selling prices of paper.

Pointing to the difficult position of raw material supply, he said the government had not made much headway in having a uniform and coordinated forest policy as recommended by the Planning Commission to ensure continued supply of raw materials to the industry at reasonable rates.

Russian and Other Communist Newsprint Shipments to India

There have been published reports in Canada and in other countries, in newspapers, to the effect that Soviet Russian exports of newsprint to India are increasing and some alarm has been expressed about the loss of traditional newsprint markets there.

These reports, as a rule have presented no figures.

From our Calcutta editor now comes official data which shows that in the first half of 1959 the imports in India of newsprint from all Communist countries has increased. Russian newsprint is coming into India at more than twice the 1958 rate, but imports from Communist China and Czechoslovakia, on the other hand, are at a much lower rate than in 1958.

Imports into India of Newsprint from USSR and other communist countries. (Long Tons.)

	1957	1958	Jan/July, 1959
USSR	7149	6380	8339
China (Mainland)	9104	10665	3466
Czechoslovakia	155	1468	655
Poland	223	2291	3286
Rumania	1386	928	1475
	10,817	21,732	17,221

These figures are small compared to production and demand, however. India's total paper production soared 19% last year to 252,000 tons (all paper) and of this, 153,600 tons was printing and writing combined. The new Nepa newsprint mills in India had not reached full production of 30,000 tons a year by mid-1959. Another proposed newsprint mill using bagasse had not made headway with proposed German builders. These are first attempts of India to make its own newsprint.

India's 397,000,000 people still consume only 1.8 lbs. a year per person of paper. Total imports in 1958 of all paper was 80,000 tons as compared with 153,000 in 1957.

India has set high targets for increasing its own paper production. Installed capacity is now over 300,000 tons; in two years it aims at reaching nearly 400,000 and then to push on to 500,000.

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THE MARK OF THE BEST IN FELTS

The blue and red stripes on this Super Plate Press Felt have identified all Huyck felts for close to 90 years.

No other feltmaker has come forward with so many "firsts" in felt-making and felt services as Huyck. No other felt has ever offered more advantages and economies.

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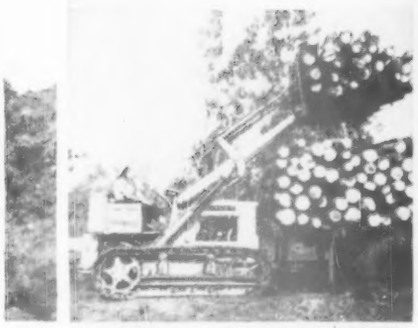
See for yourself what the husky, new OC-9 can do for you...how it'll step into those tough wood's jobs and step up production. See your Oliver dealer for a convincing give-it-the-works demonstration *and let the tractor do the talking!*

All New OC-96 Crawler Loader
with low-profile design, greatest stability, maximum visibility. One-yard bucket. Logging fork available. Has all the other features of the new Trans-O-Matic OC-9.



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LOOK TO OLIVER FOR YOUR BEST BUY IN WHEEL AND CRAWLER TRACTORS

For the New 1960's:

Helicopter Logging? Chip Pipelines?

By the Editors

● Largest single raw material cost in papermaking is the wood. Tremendous strides have been made in mechanization in the forest in past ten years; even greater progress will come in the '60's.

The South, as could be expected, has come up with some revolutionary ideas. Here are things which may become commonplace in the '60's: A 40 year pine crop rotation program for some 400,000 acres, as one company is doing already. The plan calls for clear cutting 10,000 acres/year for 40 years. Logging for poles, sawtimber and pulpwood is integrated to realize the highest monetary return.

Another Southern mill operates at a remarkably low woodyard inventory of about 8 to 10 days. It stabilizes the flow of wood to its mill using regular year-round pulpwood producers. It saves $500,000 to $600,000/year by using the wood while it is fresh, with resultant higher fiber yield, less insect damage, lower labor costs.

In the next decade, pulp and paper companies will draw more fiber needs from small sawmills. There are signs of mergers impending, as the pulp and paper companies seek better quality control of their raw material. More sawmills will debark before sawing.

The big development, of the '60's, says one expert, is in the whole log debarker. In the Far West this was the big development of the '40's. Others now may make labor savings, conserve saws, get greater production this way.

The industry in the Sixties will integrate more completely and will log its lands for the highest revenue yield. It will first harvest logs of pole and sawtimber quality, veneer quality and then pulpwood. The decision as to what quality a log is may be made by the timber cutter in the forests, or if the mill has an integrated operation of veneer, poles, lumber and pulp, the decision may be made at the mill.

Definitely, clear cutting and tree length logging will advance.

On the difficult-to-log terrains, helicopters may do the harvesting.

In the Fifties the power saw became the emancipator that took some of the backbreaking work out of bucking and felling trees. It also enabled the loggers to boost their income. The pulpwood pallet, spawned in the South, was another development.

When the pallet was first introduced on trial to a Southern logging crew, it is reported that the manager turned it down as too expensive. Later, he returned to the manufacturer and said, "Boss, I've just got to have that pallet. My men refuse to bust their guts anymore lifting them logs when the pallet will make work so much easier."

The pallet idea is catching on in the Lake States and in the Northeast. A lighter and modified wooden pallet is being used.

A tool of the '60's will be the all-purpose harvester—a machine that will

Pulpwood Mechanization Highlights of the Fifties

POWER SAW BOOSTS OUTPUT PER MAN and at same time boosts his earnings.

PULPWOOD PALLET MECHANIZES production for higher output with less manpower.

amble up to a tree, fell, delimb, debark and chip it in one operation, is already in limited use.

Light portable chippers in the woods seem a certainty for the new decade. Tank trucks or chip pipelines would carry the chips to the mill.

One authority says pulpwood logs will be chipped at a concentration yard such as the already established pulpwood concentration yards in the South. Instead of loading logs onto railcars for transhipment to the mill, the chips will be carried by water through the pipeline. At the mill the stream will flow into a chip hopper with drains for the water on the bottom or the chips will be stored outside on concrete aprons where water will drain away.

THE WOODYARD:

Outside Storage to Increase

The mill woodyard is due for some radical changes in the Sixties. Everytime a stick of wood is handled it costs money. Probably the most talked about change is outside chip storage, which started in the West, is spread-

A Whirly-Bird Pulpwood Carrier for the 1960's?

The pulpwood truck of the 1960's might well be a cigar-shaped machine with a windmill twirling overhead and a sling capable of hauling six tons of wood hanging below its belly.

Odd-looking pulpwood vehicle? Not when you consider the possibility of using helicopters in the woodlands.

One of the South's top forest engineers has already made a cost survey of this mode of wood transportation. His conclusion: Not as "orbital" as you might think.

Based on initially short hauls, with longer ones to follow as equipment is improved, here are some realistic figures on the possibility of using "choppers" in pulpwood hauling. Over a 10-mile haul—from inaccessible or water-logged areas to highway hardstands—pulpwood could be moved for as little as $15 a cord, $25 when stumpage and cutting costs are figured in.

The superbly versatile sky windmill could hover over impossible-to-reach stands of wood, drop crews at the very doorstep, pick up the wood as it is stacked and haul it out to easy-to-reach roadside areas, then move the men to other spots as they complete the job.

Nor does its practicability end there. Think of the time saved going in and out of overgrown or thinned woodlands; the roads that wouldn't be necessary; the equipment that wouldn't be necessary!

A typical plan would be to use the helicopter in one woodlands district, working in areas of a 10-mile radius, moving wood either to barge or highway hardstands, then moving on to another district when the work is completed. When the cutting district is close to the mill, pulpwood hauls could be made direct to the woodyard and delivered at a rate of six cords an hour.

HELICOPTER SWOOPS ALOFT ON AERIAL SEEDING mission over cut-over lands. Aerial seeding by helicopter is now practiced by several companies.

One helicopter, working a single district, could move 180,000 cords a year from the woods to hardstands, according to expert calculations. Cost: $150 a man-day to deliver 80 cords. Conservatively, the chopper could haul two cords of wood in a haul, make three 10-mile hauls an hour. This, too, is based on a conservative speed of only 35 miles an hour.

A slight boost in the variables used to determine these figures—and all of these variables are conservative—could give lower cost, increased production. A small increase in speed could change the daily timetable from 16 trips to 25. A company-owned helicopter with a company pilot could feasibly operate under $150 a day. These two changes alone could make the operation even more profitable.

Add to this the fact that such an operation would eliminate investments in roads through woodlands, yard machinery, necessary equipment for handling pulpwood in the woodlands and other costly facets of pulpwood operations. When not in use for pulpwood hauling, the helicopters could be used for fire patrol, mapping, movement of personnel and other chores.

Machinery of the 1960's? Perhaps. Far-sighted woodsmen are already studying operational costs and thinking in terms of airborne pulpwood marketing. How far it is in the future might depend only as how far-sighted—or short-sighted—the woods engineer of today is.

ing to the East and South.

There has been a full-fledged technological breakthrough in outside chip storage, says the American Pulpwood Assn. Tests made for periods ranging from four to six months show no more than minor deterioration. Advantages for outside chip storage are a reduction and elimination of wood loss in storage, lower handling costs at the mill woodyards, more efficiency of operation and equally favorable if not better pulping characteristics.

Underwater wood storage has been successful in several mills but the heavy capital equipment costs to store and reclaim the wood may make this practice unattractive to some.

Evolution of outside chip storage in the '60's, says one expert, will relegate silos to the past—at least as far as new mills are concerned. Storage of wood in its round form will be superseded by storing chips.

Even newsprint mills will be storing their wood supply in the form of chips. This will result from new refiners which will produce groundwood-type pulp from chips instead of cordwood.

Pulpwood in the Sixties

The industry will have to produce 10 to 20 million cords more per year by 1970. Look for increased government legislation

Based on an exclusive interview with
W. S. BROMLEY
Exec. Secy.,
American Pulpwood Assn.

• Economic predictions that have been made indicate we will be consuming 50 to 60 million cords/year by 1970 in comparison to 39 million in 1959. This is not too unreasonable when we look at the last ten years and see what has happened.

In 1949 the industry consumed some 19,945,000 cords. That means there was a 20 million cord increase in the last ten years. This use may continue for the next ten. We will have this increase from some states or areas which are not being logged now. There may be areas of temporary wood or labor shortages such as we experienced in the last six months, for instance, in the Southeast.

To avoid critical areas and periods in the next ten years the industry will have to:

1. Increase its use of chips from sawmills;

2. Accelerate research and use of hardwoods;

3. Intensify its tree planting program and work for better practices on small woodlands;

4. Accelerate activity and utilization to get maximum allowable cuts from company lands and from publicly administered forests.

If there is adequate development in these fields, I believe we will meet the tremendous anticipated demand for wood.

There are other problems and opportunities which will develop in wood procurement and logging. Accelerated demand will require a re-examination of our wood buying policies and organizations of our dealer set-up.

The South particularly will have its problems as it increases production, as it conducts logging operations for more stable employment for woods labor. It will also have to provide adequate wages to attract the type of worker who will be needed with increased machanization.

Woods accounting costs and troubles are increasing at an alarming rate due to such legislative requirements as workmen's compensation; government forms and reports, procedures and inspections continue to mount.

A major problem with no ready solution other than more active political participation is the increased tempo of all government requirements as they affect growth and harvesting. Another problem is the growing burden of taxation. The pulpwood industry will have to defend its 12-man exemption status, since it is difficult, if not impossible, to keep time records in the woods.

The next ten years may see rather than just hear about, radical new approaches:

Portable pulpwood chippers in the woods;

Much more tree length skidding.

Full length logging from stump to mill yard east of the Rockies.

Possibly such new developments as chip transportation in pipelines.

Outdoor storage of chips to be fully explored which may solve some of the inventory problems in the South.

All these developments will require closer coordination with government programs. Whether we like it or not, we are going to need government timber. The policies adopted by the government bureaus will affect our operations more in the future.

This will enhance the need and importance of trade associations. Groups such as these are about the only way private individuals can deal with the government effectively to stay in business. There may be increased attempts by labor organizations to organize woods workers but the scattered nature of the workers on some four million small woodlot ownerships averaging less than 100 acres will make it difficult to show much progress.

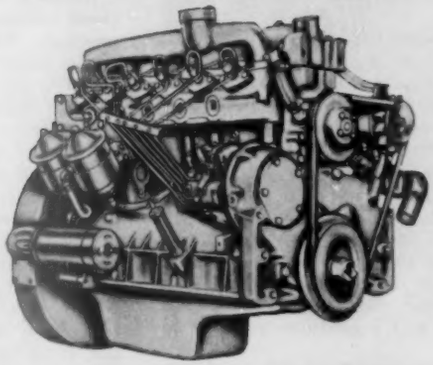
Some results of tree genetics research may be available in the next ten years to help us get greater productivity but the immediate need in the management of our forests is to apply intensively now what we have already learned about tree quality.

We will have to improve the quality of our seed trees from trees selected for seed source or used to regenerate cutover areas naturally by clear cutting or selection systems. The stocking and quality of stands must be improved during these next ten years. We cannot afford to have unproductive land.

All these problems can become opportunities to provide increasing volumes of pulpwood from forest lands in all regions these next ten years.

"The new design TD-6 outlogs our former

New 62 series TD-6 owned by Wilson B. Wright, skidding tree-length pulpwood logs from rough woods. Mr. Wright reports producing 90 to 100 cords of pulp per week with the TD-6—more than his former next-size-bigger competitive crawler could log!



For low upkeep and long life the 6-cylinder direct-start D-282 engine that powers the new TD-6 has International's famous tri-metal main and crankshaft bearings; file-hard, replaceable cylinder liners; and the most simple, efficient rotary-type fuel injection pump in any diesel!

size-bigger crawler"

—Wilson B. Wright, Woodbine, Georgia

"The new design TD-6 crawler (62 series) is logging more pulpwood for me than a larger size (competitive) crawler tractor we previously used in this same work," reports Wilson B. Wright, Woodbine, Georgia.

"TD-6 maneuverability and pull power are excellent. The quick-starting engine develops plenty of power and the tractor has good over-all flotation. The TD-6 handles up to 500 bf per load."

Mr. Wright, and all other TD-6 powered loggers, have the exclusive, 6-cylinder performance to bring big loads from rough, hilly, sandy, muddy woods; and to steer with ease on "snaky" skid-roads.

Six-cylinder diesel engine powered. Of all crawler tractors in its size class, only the International TD-6 has 6-cylinder diesel engine power wallop! And the direct-start International D-282 engine that powers this big-capacity rig is proved by millions of hours of profitable performance!

You get all the advantages of the heat-defying, dry-type, sintered metal engine clutch—for power transfer efficiency and upkeep economy. And dual-protected new TD-6 track rollers have the positive sealing and lubricant capacity to make 500-hr lube intervals cost-cutting and practical!

Size-up new 52-hp TD-6 profit-making performance. See why this fast-stepping, tough-woods-matching outfit gives next-size-bigger competitors a real "run for their money." Compare operating and upkeep economy. See your International Construction Equipment Distributor for a demonstration!

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A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers and Bottom-Dump Wagons . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carburetor Engines . . . Motor Trucks . . . Farm Tractors and Equipment.

PRETTIEST GIRL IN TAYLOR COUNTY is surrounded by four members of her court in 69-unit parade which started two-day celebration. At right, in "Festival Park," Buckeye's woodlands mgr. Erdman West watches as young seedling is planted. New seedling will be planted in this park each year.

Woodpulp and Pine Trees Are Now Breath of Life for Florida Community

Perry, Fla.

● Here is a town that owes its lease on life to the pine tree—and knows it! For the fourth straight year Taylor County's "Pine Tree Festival" has been a walloping success, thanks in part to the interest of Buckeye Cellulose Corp.'s local staff.

This celebration—which lasts 24 hours, starting with a "Little Miss America" contest to chose the festival queen and ending with a picnic and circus—is dedicated to the pine tree and well it should. ***Pinus strobus*** is a money tree to Perry and Taylor County. As a result Buckeye's community relations are almost perfect.

Once a thriving sawtimber center, Taylor County in 1929 boasted the largest sawmill operating east of the Mississippi River. But by 1940 its land was almost denuded by the heavy wood demands of the timber industry. Sawmills began to shutter and while the rest of West Florida was growing, Taylor County's population dropped 10%.

The one hope was the pine tree with its rapid growth rate. In 1929, believing firmly in reforestation, the Brooks-Scanlon Lumber Co. had put out 1,350 pine seedlings—hardly enough to cover two acres. But when local residents saw them 10 years later they took hope. By the 1940 planting season, some 700,000 pines had been planted and in the following 10 years this number grew phenomenally to 30 million! Thoroughly encouraged by this example, Buckeye in 1951 purchased 125,000 acres in nearby Foley, followed it the following year with 440,000 more acres. In 1954 its $30 million dissolving pulp mill was in production and two years later a $20 million expansion was underway.

What has the pine tree done for Perry? Buckeye's annual expenditures are now more than $15 million. The city of Perry has grown from 2,800 citizens in 1951 to 8,500 today. Businesses have increased from 192 to 328 and bank deposits spiraled from two million to six-and-a-half million. Building permit values have soared from $85,000 to more than $600,000. That's what a tree and a paper company did for one county.

Bumper Crop of Cones at Port Townsend

● Over 1,850 bushels of hemlock, white fir and douglas fir cones were collected by local residents and sold to the Port Townsend, Wash. kraft mill of Crown Zellerbach Corp.

Those collecting the cones included some Boy Scout groups as well as private citizens who were paid $5.00 a bushel for hemlock, $1.50 for white fir and $2.00 for douglas fir. They responded to an advertisement in the Port Townsend newspaper which told of the company's interest in purchasing cones. Don Campbell, forester at the mill, indicated that this year's crop was one of the largest ever taken in this area and should satisfy the corporation's local need for seeds for the next seven years.

The cones were stored for two months in a building nearby, and now have been shipped to Crown Zellerbach's Columbia Division at Vernonia, Ore., where they will be dried. The company utilizes a privately owned prune drier during the off season for this purpose. After drying, the seeds are extracted from the cones, dewinged and cleaned. The clean seeds then go to a cold storage plant

until needed. Approximately two years in advance of planting in the forest, the seeds are taken to the Forest Industries Nursery at Nisqually, Wash., where they are planted in seed beds for nurturing from one to two years. From this point they are taken to the site where the reforestation has been planned and are hand planted.

The cones and resulting seeds are all catalogued by specie, location and elevation of the mother tree. This is done so that the seedlings can be replanted in a similar location and within 500 feet of the elevation where the cones were originally gathered. This is all a part of the reforestation program which is intended to aid nature in propagating the growth of timber, especially in logged or burned off areas where natural reseeding is not considered sufficient for good land utilization.

Occasions arise when selective cone picking is done in an effort to reproduce timber with especially desirable characteristics.

Record Pulpwood Purchased noted at Port Townsend

An increasing volume of pulpwood is being used by the Crown Zellerbach **kraft mill at Port Townsend,** Wash. This has been brought about by full pulp and paper production and the company's interest in cooperating with and aiding local wood lot owners and contractors.

In the spring of 1957 plans had been made for a continuing program of utilizing both alder and fir pulpwood at the Port Townsend mill. A Nicholson mechanical pulpwood barker had been installed and testing of barking problems and spuds had not even been completed when the recession came along. Waste wood chips, purchased under long-term contracts from Puget Sound and Canadian sawmills and pulpwood plants, more than supplied the curtailed production at the local mill for over two years.

Now, once again market conditions permit the purchases and utilization of local pulpwood.

On Oct. 26, for example, 85 cords of wood were delivered to the mill by local pulpwood vendors who either own their own land or have bought stumpage for this purpose. (At present 39 vendors have pulpwood purchase orders.) Also received on the same day were 50 cords of pulpwood brought to the mill by contractors hired to thin on company-owned lands. This total of 135 cords represents the largest volume of pulpwood delivered to the mill in any one day. Eventually, it is expected that this will amount to the equivalent of a $4,000 per day payroll.

The company is purchasing fir as well as alder which is used in small amounts. This is one of the few mills in Washington State utilizing this "weed" tree.

Russia Emphasizes Quantity Not Quality in Paper—Garratt

● George A. Garratt, dean of the Yale University School of Forestry, New Haven, Conn., back home from a tour of Soviet Russia with a team of seven U.S.A. foresters, told this magazine that Russia is making a "very definite effort to expand its pulp and paper production."

"Our American Forestry Team visited a pulp and paper mill in Karelia, as well as a paper mill south of Leningrad, and we were generally well impressed with the quality of the product and the workmanship we observed," said Dr. Garrett.

"This is one field in which the Soviet Union is definitely striving to expand. However, the pulp and paper industry appears to be concentrated on a greatly enlarged production of basic papers and not much concerned with a variety of paper products or with the newest techniques."

(The editor of this magazine, reporting on his Russian trip earlier this year, reported 12 new mills are being built this year—four in the South to utilize marsh reeds for cellulose and most of the other 12 in the Ural Mountain area, using wood. Two big new machines will make coated paper by the Massey on-machine mass production method, several new mills will make linerboard and corrugating, and a wood cellulose mill will make raw material for high tenacity tire cord. A 9% to 10% increase in paper production is projected each year for seven years. Paper production in Russia was 3,252,370 short tons last year. Pulp output was 3,195,280. Per capita consumption for its 208,000,000 people is 31.7 lbs. per person.)

Dr. Garrett said the Soviet Union is lagging behind the U.S.A. in both quality and quantity of all wood products, but wood production is being speeded up under a 7-year plan. "The progress to date (in logging) appears to be in the area of mechanization rather than technology of wood use. Improvements in quality of wood products in the Soviet Union are not nearly so striking as the increases in quantity."

In several of the wood-product plants the American foresters visited, he said, "the processing appeared plagued with outdated design, backward methods of production, antiquated and inadequate machinery, and low quality of the production."

The vast forests of the U.S.S.R. cover some 2,827,000,000 acres, he said, as compared to 784,000,000 acres of total forest land in the United States. But most of the Russian forests are softwoods and its hardwood stands are much less than in North America, both in extent and in diversity of species.

In output, Russia produced 34 billion board feet of sawed lumber in 1958, as against American production of close to 40 billion board feet.

"Under the Seven Year Plan," he continued, "production goals for the forest industries in Russia call for a marked increase in virtually all categories of wood products. In contrast to the expected 1959 manufacture of prefabricated houses in the equivalent of 107 million square feet of floor space, the Soviet sawmills have a goal of three times this output by 1962, but still this will be far below U.S. figures."

"There is a general use of capitalistic incentives, such as the bonus system, as a spur to increased productivity," he said.

"In research, there is a definite dearth of fundamental investigative work. This also seemed to be the case in the strictly research institutions, where the staffs were devoting their attention primarily to studies of an applied nature.

"In fact, we saw little effective research in the forest science field, other than in areas related to mechanization. One of the most striking observations was the general lack of greenhouses at both educational and research institutions."

COST OF CLEARING?
only $8.53 an acre with this D6!

South of North Bend, Oregon, the Menasha Wooden Ware Corp. initiated a reforestation program on 1,000 acres of logged over land. The area was hilly and heavy with dead logs, stumps, brush and small alder. For clearing sections like this, the company used a Cat D6 Tractor with No. 6S Bulldozer and a winch pulling a disc harrow. The disced strips, 7 feet wide and 10 feet apart, were laid out on contour. Production: 1.2 acres an hour at the cost of only $8.53 an acre. Said Ralph W. Horn, Land and Timber Manager: "For size, power, cost and maneuverability, the D6 is tailored for this job."

From clearing through planting, that sums up the low-cost answer to *any* phase of reforestation—the right tools for the job on hand. Here the D6 proved itself the right power tool. Built to outwork any tractor of comparable size, the D6 combines high production and availability with low-cost operation and maintenance. For instance, its Caterpillar Engine operates without fouling on economy-type diesel fuels. Its exclusive oil clutch delivers up to 1,500 hours without clutch adjustment.

Is the D6 the best answer to your site preparation work? That depends entirely on the job. You may find that a D4, D7, D8 or D9—or a Traxcavator—serves your purpose best. For dollars-and-cents figures about their performance on all phases of reforestation, see your Caterpillar Dealer!

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Forest site preparation —machine-and-method cost studies available

Growing a profitable crop at the lowest possible cost calls for methods and machines best suited to each phase of the operation. Complete cost studies, compiled from actual jobs, are available on the following subjects: Stump Treatment; Stump Clearing and Tree Cutting; Chaining; Raking and Windrowing; Harrowing; Planting. For information, write Logging Section, Caterpillar Tractor Co., or call your nearby Caterpillar Dealer.

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HEAVY-DUTY WOODS EQUIPMENT FOR THE HARD WORK

Needed: A Planter With Built-In Power

Preliminary study at Battelle Institute envisions a planter with mechanisms to dig, space and fertilize

By WILLIAM C. FINLEY
Technical Advisor,
Battelle Memorial Institute

● For several years there has been a growing feeling among men in the timber-producing and using industries that it is high time that mechanical tree planters were improved. Indeed, economics dictates major improvements in mechanical planters.

To quote a recent article in PULP & PAPER'S Pulpwood Annual (May 1959 issue, page 125) by R. V. Malecki of Union Bag-Camp Paper Corp.:

"Tree planting has become an important tool of intensive (land) management. Continuing improvements are being made to the seedling and the area to be planted. We feel that these improvements should also be applied to the actual technique of getting the tree into the ground. Here is an area where we can get some of our costs in line."

Little Progress in 10 Years

While the idea of an improved mechanical tree planter is not new, there seems to be little progress toward making the idea a reality. Today, more than 10 years after the first tree-planting machines were introduced into the South, there has been essentially no change in this equipment.

True, the present-day tree planter remains a relatively inexpensive tool. But when you consider the capital invested in the tractor needed to tow it and the time of two men needed to complete the planting operation, tree planting by existing methods is an expensive proposition. For example, during the past planting season one company planted 22,000,000 seedlings on company-owned land. This task required 43 planting machines, 23 crawler tractors, 20 wheel tractors and 91 dibble crews. These considerations, brought to the attention of Battelle Institute by industry foresters and timber men, led our mechanical development group to make an informal preliminary study.

One important area for improvement that we immediately recognized was the need for a planting machine with its own source of power. Experience with other mechanisms suggested that a 10-horsepower engine could be mounted directly to the planter vehicle for the needed power. With such a self-propelled unit, planting could be done by one man who would ride on the vehicle, guide it, and feed seedlings into the planter mechanism.

Digging Mechanisms

Then, too, Battelle's own experience in forestry practice and checks made with timberland operators suggested that there is no reason why the ground between planted trees should be plowed as a part of the planting operation as is now done. A suitable hole in the ground could be made for the planting of each seedling. There are several possible mechanisms which could be used to provide the hole in the ground. One mechanism is the modification of a trenching device, developed at Battelle, to dig a narrow trench in the ground. This unit uses a digging mechanism similar to a chain saw. Trenching rates up to 15 feet per minute at a depth of 12 inches were obtained when this machine was powered by a 10-horsepower gasoline engine. A unit of this type could be used to dig a hole approximately 6 inches square and 18 inches deep straight down into the ground.

Another mechanism which could probably be used is a rotating or a drilling type unit which would dig a round hole 6 inches in diameter and 18 inches deep. Based on experience with the trenching unit, both of the methods described here could pulverize the soil from the hole and remove roots and small-size rocks. The soil could be replaced in the hole mechanically and tamped following the placement of the seedling in the hole at the proper depth for planting.

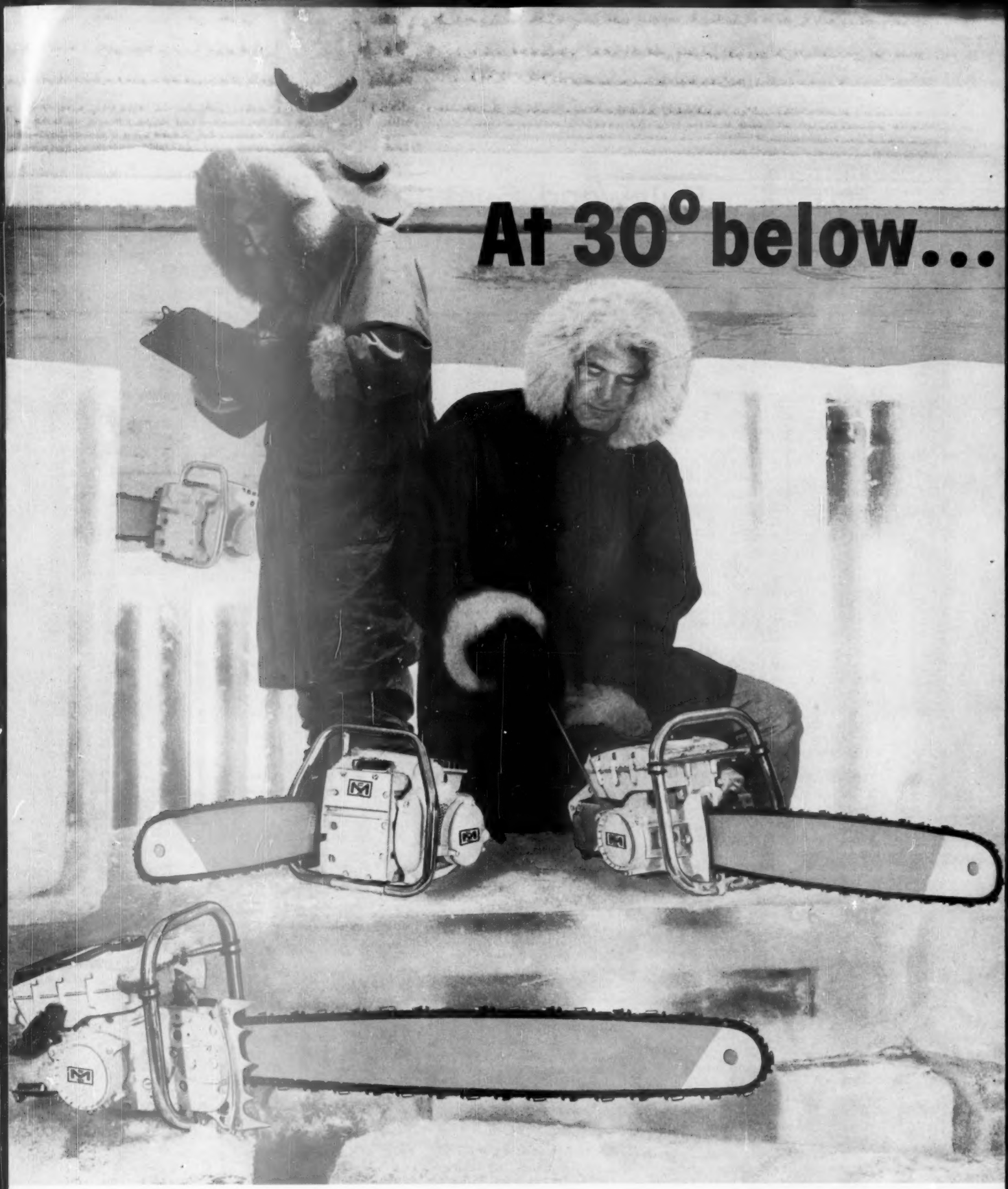
Mechanize Spacing and Fertilizing

To round out the improved tree planter we visualize, a method for setting desired spacing of trees could be built into the planter mechanism, and some method for applying fertilizer or water or both could be developed and made operable on the planter.

WM. C. FINLEY serves as liaison between Battelle Institute in Columbus, O., and the pulp and paper industries.

An additional "plus" feature such as cultivating equipment might be developed to make the unit more versatile. A cultivating device attached to the planter should prove useful in the early establishment of many plantations where it is essential to keep weeds, grasses and woody sprouts at a minimum. Certainly the 10-horsepower engine would be adequate to provide the necessary power requirements to operate the mechanism.

The conclusion from our study is that such a planter is not only needed, but is entirely feasible from the mechanical standpoint. Prior experience with mechanisms of similar complexity indicates that a research and development program to produce a field-tested machine would cost about $25,000. This is but a fraction of research and development costs of most new products in the agricultural and forestry machinery field, and such a self-contained tree planter might be an excellent diversification opportunity for some manufacturer as well as a needed tool for the timber and pulp industries.



TORTURE TEST NO. 71-42-8
McCulloch ONE/70 direct-drive chain saw subjected to −30° F. for 40 hours. At completion of impound period, saw tested for starting and wood-cutting performance. No adjustments made.

RESULTS: On first pull of starter rope engine turned easily and smoothly. Second pull produced partial combustion. Third pull resulted in full power start. Saw idled and accelerated smoothly. Subsequent wood-cutting analysis proved torque and RPM excellent.

Meet McCulloch's New **NUMBER ONE** Saws

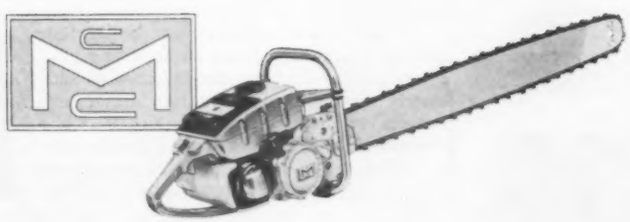
or 120° above...

McCulloch's new Number One saws start in seconds, deliver smooth power right now!

PLACE: Mojave Desert, California. MAX. AIR TEMP: 119.6° F. STARTING: Maximum 3 pulls. MAX. ENGINE TEMP. AT SHUTDOWN: 432.2° F. TYPE OF WOOD CUT: Oak, Fir, Pine, Cedar. PERFORMANCE: Full power. Constant torque transmission to chain.

A man who makes his living with a chain saw can't always wait on the weather. That's why we put our new McCulloch *Number One* saws through brutal torture tests to prove they start fast and keep cutting strong in arctic cold or blistering summer heat – or any weather condition in between.

Temperature is just part of the story as far as our tests at McCulloch are concerned. We put our new *Number One* saws through the most severe torture tests our engineers could think of. Starting tests. Endurance tests. Field tests. And, finally, tests on the job by hundreds of professional loggers and wood-cutters throughout the country. Altogether, more than 40,000 man-hours and $1,000,000 were spent testing the *Number One* saws. The results prove that, dollar for dollar, pound for pound, McCulloch is *Number One*. Reliable. Lightweight. Powerful. Easy on the man. Try *Number One* at your McCulloch dealer.



ONE/80 Gear-Drive

- More lugging power than any other saw its size
- Only 25 pounds • Takes bars up to 44"
- Takes 15" plunge bow • Dynamically balanced
- Pintail Chain. • **Seven models to choose from.**

Prices start as low as $154.95

LEADERSHIP THROUGH CREATIVE ENGINEERING

McCULLOCH CHAIN SAWS

Number One In World Sales

For free booklet write McCulloch Corporation, Los Angeles 45, Calif., Dept. P-6

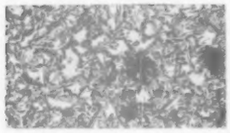
McCulloch Corporation, Los Angeles 45, California • Marine Products Division (Scott Outboards), Minneapolis, Minnesota
McCulloch of Canada Ltd., Toronto, Canada • McCulloch International Inc., Los Angeles 45, California

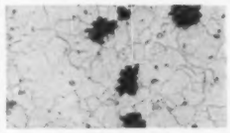
5-9003B

POWERFUL CHAIN FOR PULPWOOD HANDLING

Attachments are available to suit a variety of conveyor applications.

File-hard surfaces of Flint-Rim sprockets help maintain efficient, dependable performance of chain and sprockets . . . prolong chain life.





Promal or file-hard Promal chain can be furnished for unusually abrasive conditions. Dark areas in Promal structures (left) show stronger, stiffer reinforcing material. Malleable (right) shows white "free-iron," black is soft carbon nodules.

Broad sliding surfaces of Link-Belt C-132W chain hold up longer on drag conveyors

Yes, with its broad top and bottom surfaces, Link-Belt C-132W chain is particularly resistant to the sliding wear encountered on carrying and return runs of drag conveyors. This high durability pays off in low maintenance, minimum shutdowns.

C-132W chain combines cast center links with steel sidebars connected by steel pins — offers ample, live joint bearing area to withstand pulpwood punishment. For further facts, contact your nearest Link-Belt office or authorized stock-carrying distributor, listed under CHAINS in the yellow pages of your phone directory. Or write for new Catalog 1050.

LINK-BELT

CHAINS AND SPROCKETS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Warehouses, District Sales Offices and Stock Carrying Distributors in All Principal Cities. Export Office, New York 7; Australia, Marrickville (Sydney); Brazil, Sao Paulo; Canada, Scarboro (Toronto 13); South Africa, Springs. Representatives Throughout the World.

6% Growth Every Year for 5 Years Predicted for Scott Paper Products

1. Market researchers for Scott Paper Co. predict a growth rate for its trademarked paper products of 6% every year for the next five years. Even a greater growth than this average is predicted for napkins and paper towels.

2. Despite the steel strike, Scott sales and earnings will set records this year.

3. Scott is devoting considerable research effort to the subject of scientific marketing, as it expects these techniques will accelerate the growth. Only three out of five families now use paper towels. Scott expects quality improvement to attract new users.

These were among points stressed by a Scott spokesman, Dudley A. Ward, treasurer, in a recent address before the Investment Analysis Society of Chicago.

Scott also counts on growth in sulfite and kraft specialties, food wrap and bag stock. Showing its confidence in these fields, said Mr. Ward, is a program now underway to install a new 214-in. paper machine by mid-1961 at its Mobile, Ala., mill, along with increased pulp capacity. This machine will be able to make 70,000 tons a year with sales potential of $20,000,000.

Discussing new Scott products, he cited Dura-Weve (sandwiched rayon thread in thicknesses of paper) and said its sales for nine months in 1959 were over 100% ahead of 1958. He said 23 airlines and railroads are using it. ScottFoam (a porous urethane foam) is now used for interlinings by 30 garment manufacturers, and has just become standard air filter equipment for several General Motors cars, and also for home air conditioners and truck brake systems.

Scott entered the paper drink cup business in Joa Co. facilities which it bought in Philadelphia. It also has a new polystyrene plastic cup (no taste from cup) and has begun selling both paper and plastic cups in Middle Atlantic states. Mr. Ward mentioned Scott's "Gripper-Kraft" bag stock as "a highly significant development."

Scott has also entered the sanitary napkin field, buying equipment to make this product, and expects to win a sizable share of this $150,000,000 annual market.

Scott's "Student Edition"

Scott Paper Co. issues a "Student Edition" of its annual company report and this has been distributed to 437 colleges and universities, at their request. Over 42,000 copies have been printed for students.

There are several attractively printed half page inserts opposite several important financial tables or other sections of the report, including the president's report. These inserts explain points of interest to college students, including the significance of some management and operation practices, and special terms used in an annual report.

It all adds up to a very fine job of reaching students throughout the country with the story of a prominent and progressive industry.

Two Government Methods for Inspecting Paper It Buys

● When the Quartermaster Association held its 1959 convention at the Statler Hilton Hotel in New York recently, some 75 paper companies, most of them already doing business with the government, came to discuss problems on how contracts and bids are handled by QM and the General Services Administration.

Most paper industry representatives were from the coarse and barrier materials segments with a minority from fine papers. There is some talk that the two groups may have separate meetings next year to iron out problems.

A feature of the program was a movie highlighting the new QM inspection procedure which puts the responsibility upon the supplier to conduct all tests on all products he produces for the government.

The GSA, which buys the bulk of paper products, outlined its procedure which is in direct contrast to QM in most areas. GSA has put certain qualified mills on what is known as a quality assurance basis which allows them to conduct and certify that the product meets government specifications. No government inspectors enter these mills.

For all other GSA suppliers, inspection will continue to be conducted as in the past. Government inspectors will supervise all inspection procedures at the source.

Both QM and GSA praised the paper industry for its overall high quality and the fact that there were few marginal operators.

Taking part in the panel discussion were Capt. William L. Hirsch, chief paper branch, purchasing div., QM purchasing agency, military chairman; Walter C. Feinberg, industry chairman; Kerrin A. Strong, QM purchasing agency; Lt. Col. V. L. Lewis, chief and J. L. Alden, QM quality control agency.

How Bids are Let

The QM has a list of qualified bidders for each product. A firm can become a qualified bidder, if not already on the running list, which the QM keeps, by filling out a form from the U.S. Army Depot in Columbus, O. In some cases a pre-award survey is made of the plant. All firms on the bidders list are notified by letter when a bid is opened and those who express interest are given details so that they can enter a bid.

CPPA-TAPPI Meetings Are Set

Technical Section, Western branch, Canadian Pulp and Paper Assn., will hold its 1960 Spring meeting at Hotel Leopold, Bellingham, Wash., with the Northwest Section of TAPPI. Northwest superintendents will be holding their PIMA meeting separately about that time in San Francisco.

A tri-meeting representing CPPA Technical Section, Northwest TAPPI and Superintendents will be held in the spring of 1961 at Harrison Hot Springs, B.C.

These decisions were reached at a recent meeting of CPPA technical people at Qualicum, Vancouver Island, attended by about 55 members and presided over by Chairman JOE SHUMKA, MacMillan & Bloedel.

Among those who presented papers were T. L. FENWICK and J. W. THOMAS, Elk Falls Co.; J. R. WILSON, H. WORSTER and D. O'MEARA, Columbia Cellulose Co.; J. W. STECH, Rayonier Canada, BYRON JOHNSON and ARIE VAN DONKELAAR, Crown Zellerbach, Canada.

"Rags make paper, paper makes money, money makes banks, banks make loans, loans makes beggars, beggars make rags" was a 19th century ditty.

PULP & PAPER

Strictly Personal

Midwest

L. E. SMITH, Appleton (Wis.) div. mgr. for Consolidated Water Power & Paper Co., has retired and is succeeded by HAROLD J. LAUSMAN, former asst. mgr. He held the post since 1943, prior to which he was mgr. of manufacturing and board member of Nekoosa-Edwards Paper Co. . . . CLAUDE MASON, conversion foreman, becomes conversion supervisor at the King Mill of Allied Paper Corp., Kalamazoo, Mich. . . . THOMAS A. JONES has been named president of Manchester Machine Co., succeeding JAMES BOYD, who has retired but continues as a consultant of the Monroe, Ohio firm. Since early this year Mr. Jones has been with the Molded Packaging div. of Diamond National Corp., parent company.

Kimberly-Clark Corp. announces promotions: B. L. PAYNE, mgr. of manpower development, to mgr., management research and development; G. A. RUSHTON, personnel mgr. for research, to succeed Mr. Payne, and HAROLD R. WENTZEL, instrument engineer, to development engineer for research at the Kimberly, Wis. mill. . . . "You'd Better Come Quietly" will be the topic of an address by EDWARD MCFAUL, internationally known speaker, as he appears at the January 21 meeting of PIMA's Michigan div. Toastmaster for the gathering—to be held at the Hotel Harris, Kalamazoo—will be L. D. NICOLSON, vice pres. of Hamilton Paper Co., Plainwell.

DONALD H. KUENNING has been named Milwaukee district representative for Allis-Chalmers Mfg. Co.'s Industries Group. . . . Nichols Engineering & Research Corp., New York, N. Y., has added L. NEIL BROWN to the staff of its Midwest office. He will handle sales of Vortrap Vorvac and Vorject stock cleaners to the pulp and paper industry. . . . C. P. PESEK, vice pres. for engineering and staff manufacturing, is elected to the board of Minnesota Mining & Mfg. Co. . . . Another 3M officer, R. W. MUELLER, vice pres. of the Industrial Trades Tape and Mid-States Gummed Paper divisions, has been named president of the Pressure Sensitive Tape Council. . . . MACAULEY WHITING is new gen. mgr. of the Midland div. of Dow Chemical Co. to succeed the late DR. WILLIAM H. SCHUETTE, Dow vice pres. who died unexpectedly in November. Mr. Whiting was formerly mgr. of service depts. . . . NATT K. HAMMER is new industrial products sales mgr. for A. E. Staley Mfg. Co., Decatur, Ill. corn and soybean processor.

Midwesterners elected to posts in the Fibre Box Assn. at the group's recent annual meeting in New York, N. Y., included: CLARENCE F. SMITH, marketing vice pres. for Inland Container Corp. (president); RICHARD N. HOERNER, board chairman of Hoerner Boxes Inc. (a director), and JEROME H. STONE, exec. vice pres. of Stone Container Corp. (Western div. chairman). . . . C. M. (CAL) BASILE, director and vice pres. in charge of operations, has been named president of Link-Belt Speeder Corp., Cedar Rapids, Iowa, to succeed D. W. LEHTI, who has retired after 25 years with the firm. . . . The Chemurgy div. of Central Soya Co. has named JAMES E. SULLIVAN to its special soya products chemurgy sales organization.—DON W. ZEIGLER.

Keeping Up a Safety Record Now in 14th Year . . .

. . .is this Broke Department crew at the Rhinelander Paper Co. in Rhinelander, Wis. The mill's No. 6 and 7 Beater Room Crew was well into its 18th year without a loss time accident when its record was recently broken. In this picture: Standing l to r: LEONARD PARKINSON (Paper Mill Supt.), DAVID COX, ED MARIK, WALTER RIMSHAW, GERALD DROSSART, GEORGE RANE, DONALD BIESIK, JAMES DUNLAP (assistant to the paper mill supt.). Front Row: STEVE SCHULTZ (Broke Dept. Foreman), DALE RADTKE, TOM SCHULTSTROM, STANLEY HYNEK, CLARENCE CARLSON.

Int-Hout Pender Philipps

Dan Int-Hout, Sr., Retires; Two New Vice Presidents

Mr. Int-Hout, director and vice president of Michigan Carton Co., has retired after serving the Battle Creek firm as manager of its Chicago sales office for 30 years. He has also been a director of the National Paperboard Assn. and the Folding Paper Box Assn. He will make his home in Fort Lauderdale, Fla.

ROBERT G. PENDER was named a member of the board of director and elected vice president, board sales. LOUIS J. PHILIPPS, chief plant engineer, was elected vice president, engineering. The board action with reference to Mr. Pender does not change organization of the sales dept. HARRY CHORPENING continues as general sales mgr.

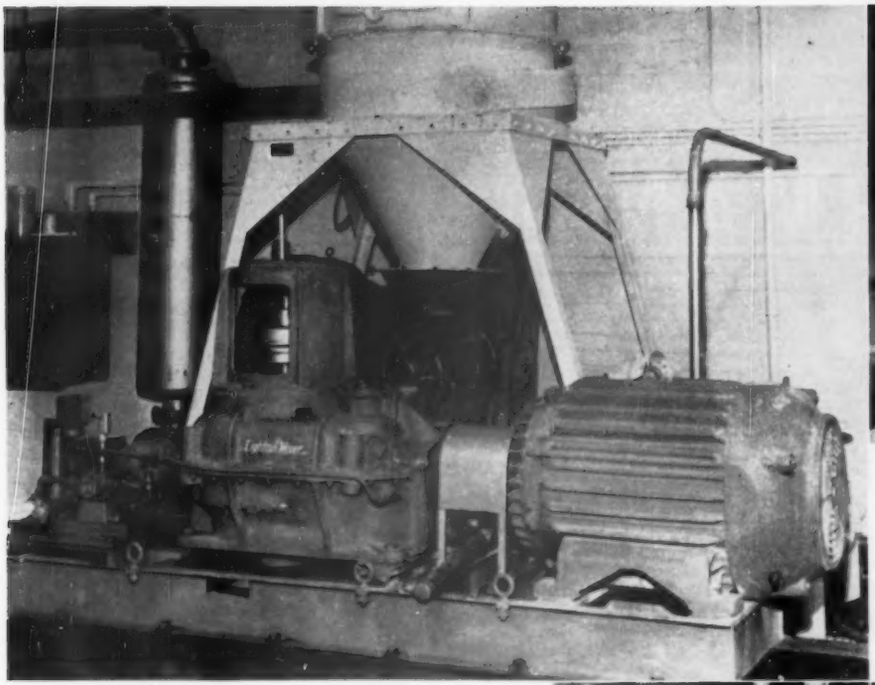
Outlining Program For Pulp Bleaching Conference

A program for the TAPPI International Pulp Bleaching Conference at Chicago's Edgewater Beach Hotel June 14 to 16, is being arranged by a committee headed by R. J. AUCHTER, Kimberly-Clark Corp., Neenah, Wis.; assisted by JOHN F. WHALEN, Combined Locks Paper Co., and JAMES D. WETHERN, Riegel Carolina Paper Corp. Consideration has been given to theoretical aspects as well as practical applications.

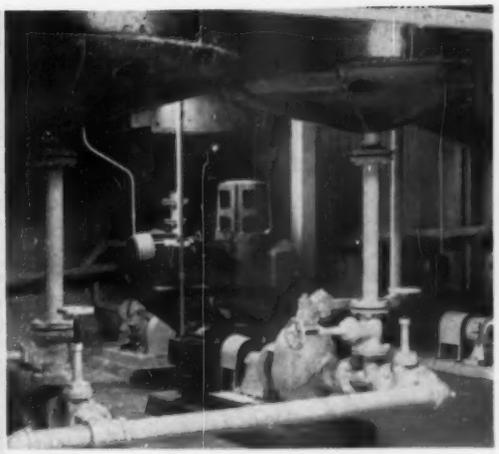
FERDINAND KRAFT, Marathon Division, American Can Co., is general chairman, and HERBERT O. TEEPLE of TAPPI, New York, is in charge of the general arrangements.

Andy Miller Dies

A. J (ANDY) MILLER, JR., 52, vice president, industrial relations, The Mead Corp., died in Chillicothe, O., Dec. 4, following an illness of several months. He was with Mead since 1944 in industrial relations and was elected vice president in 1953. He was born in Forrest City, Ark., graduated from the University of Tennessee. He was secretary-manager for the Fox River Pulp and Paper Assn. in Appleton, Wis., before joining Mead.

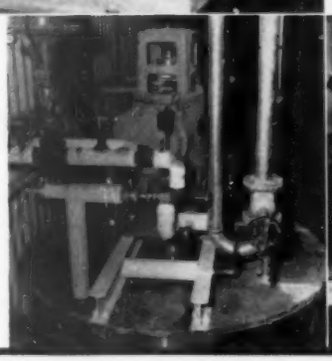


MAKEDOWN One 75-hp LIGHTNIN Mixer slurries 50 tons of dry clay—a hopper-car load—as it feeds into dispersion tank at 12.5 tons per hour.

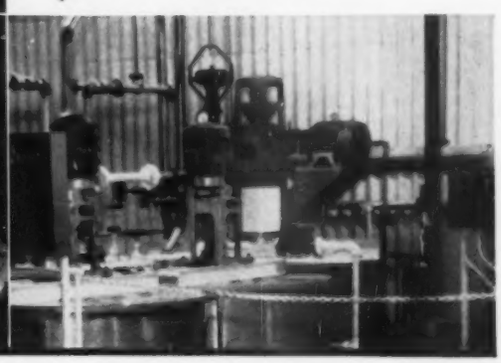


CLAY SLURRY at 71% solids waits in five 120-ton storage tanks, held in uniform suspension by 10-hp LIGHTNIN Mixers.

STARCH MEETS WATER in 1,000-gallon tanks. Then clay slurry is charged, reducing solids to 52-58%. A 3-hp propeller-type LIGHTNIN Mixer in each tank assures consistent density of feed to continuous cooker.



HIGHLY THIXOTROPIC clay-starch slurry from cooker turns over in two tanks equipped with 10-hp LIGHTNIN Mixers. Then it moves to 1,000-gallon storage tanks where 5-hp LIGHTNIN Mixers keep it thoroughly blended to prevent crusting before use.



One man, 20 mixers clobber cost of coatings

Designed to handle clay in bulk as a slurry, this new mixing system at Blandin Paper Company, Grand Rapids, Minn., helps in four ways to prepare coatings at record low cost.

1. The system itself cost much less to build than comparable coating facilities.

2. It permits the purchase of lower-cost bulk clay.

3. Ended are the problems of space-wasting dry storage, handling of bags, and dust. Clay is always ready for immediate use.

4. One man per shift handles all operations—with the help of 20 LIGHTNIN Mixers ranging in size from 3 to 75 hp.

What mill management says

"We knew that mixing was going to be a vital part of our new process," says Harold F. Zigmund, Blandin's vice-president in charge of manufacturing. "We required equipment that was sound and could give us the process result we were looking for.

"LIGHTNIN Mixers have enabled us to accomplish both of our goals. The cooperation and service we have obtained from the MIXCO field representative have been most helpful to us."

Since completing the new coatings plant, Blandin has decided to use LIGHTNIN Paper Stock Agitators on the mill's three brown-stock chests, a neutralization chest, and a broke chest.

Guaranteed mixing performance can mean savings for you, just as it does for Blandin. And it's easy to get. At a call from you, an experienced LIGHTNIN Mixer representative can size up your needs and help you select precisely the right mixing system to deliver the results you want.

He draws upon the experience of thousands of test runs, and successful installations in several hundred mills. He offers you widest possible choice of *standard* power-speed combinations and mixer designs. Call him in now (he's listed in Paper & Pulp Mill Catalog). Or write us direct.

Lightnin® Mixers

MIXCO fluid mixing specialists

MIXING EQUIPMENT Co., Inc., 141-a Mt. Read Blvd., Rochester 3, N.Y.

In Canada: Greey Mixing Equipment, Ltd., 100 Miranda Ave., Toronto 19, Ont.

PERFORMANCE

If your felt hasn't got it here

(you know the rest!)

Every ALBANY FELT

has it!

Performance means many things . . . and profit depends on it! All the requirements for good felt operation are carefully manufactured into every ALBANY FELT: uniformity, strength, porosity, the qualities for finish, and often the chemical treatments which can contribute to strength, finish and speed.

Each Albany Felt is tailor-made to the exact requirements of your machine. That's why you can be sure that profitable trouble-free performance will result.

Albany Felts are noted for performance, and *nearly every paper and paperboard maker consults Albany* on how their felts should be designed. This step means savings and more saleable tons per day.

Talk over felt performance and mill profits with your Albany Felt Sales Engineer. *It will pay off for you.*

Engineering Service
Laboratory Service
Research Service

Available to You Without Cost!

AF

ALBANY FELT COMPANY
ALBANY, N. Y.

The World's Largest Manufacturer of Paper Machine Felts

Felt Facts

Yesterday's Research is Paying off in Production Records, Today

In many high-grade paperboard mills, FINISH is a major objective. Finish . . . to meet the exacting requirements of today's modern packaging industry, must be satin-smooth. Super-smooth finishes require the right felt, which means the right design, correct blending of wools and synthetics, and close manufacturing tolerances.

The Albany Felt research of "yesterday" has resulted in superior felts which have these special features for better finish, together with trouble-free operation that assures maximum drainage and production. For example, the exclusive Albany J-3 Chemical Treatment, which resulted from research, gives the felt a softness and openness which helps toward fine finish and longer felt life. So you can see that our Research is not an "ivory tower" proposition — to you it means better finish, maximum daily production, less down time — in other words, improved felt performance.

J-3

TALK IT OVER WITH YOUR ALBANY FELT SALES ENGINEER

PULP & PAPER — Strictly Personal

Christian Vechinski Gremban

Promoted at Nekoosa-Edwards

NEIL H. CHRISTIAN, Port Edwards mgr. since 1947, becomes production mgr. for both the Nekoosa and Port Edwards, Wis. mills. He is succeeded by RAYMOND J. VECHINSKI, formerly Port Edwards paper mill supt. New paper mill supt. is EDWARD G. GREMBAN, asst. supt. more than three years.

Northeast

HAROLD V.P. FRANCIS and MICHAEL D. MULLIN are new eastern regional vice presidents for Corn Products Sales Div. of Corn Products Co . . . ARTHUR L. BULL, first vice president of Crocker, Burbank Papers Inc., retires after 46 years in the industry. He started in 1914 in cost accounting, purchasing, production and sales and as an executive vice president with Fitchburgh Paper Co., moved on to Crocker, Burbank & Co. Ass'n. in new products sales promotion in 1935. Mr. Bull expects to spend winter vacations in Florida says, "expect to see you around bcause old paper men never die, they just become 'broke'."

GEORGE R. WALLACE III, president, Fitchburg Paper Co., recently returned from a 10-day trip to Italy, Switzerland and France to see paper mills there which make products similar to his company's. He visited the Cartiere Ambrogio Binda mills of Edoardo Cirla who worked at one time at Fitchburg Paper and who visited the U.S.A. with a group of Italian TAPPI engineers last May.

Matheson Elcik

Mechanical Maintenance Promotions at Fraser, Madawaska, Me.

W. D. MATHESON is now supt. of mechanical maintenance. A b.sc. (civil engineering) of the U. of New Brunswick, he joined Fraser in 1950 at its parent company's pulp mill at Atholville, N.B., moved to industrial engineering at Edmundston, N.B. and to the Madawaska mill in 1959. A. W. ELCIK has his b.s. from Gorham State Teachers College, joined Fraser in 1955 as an apprentice engineer and is now asst. supt. of mechanical maintenance.

Crozier Perkins

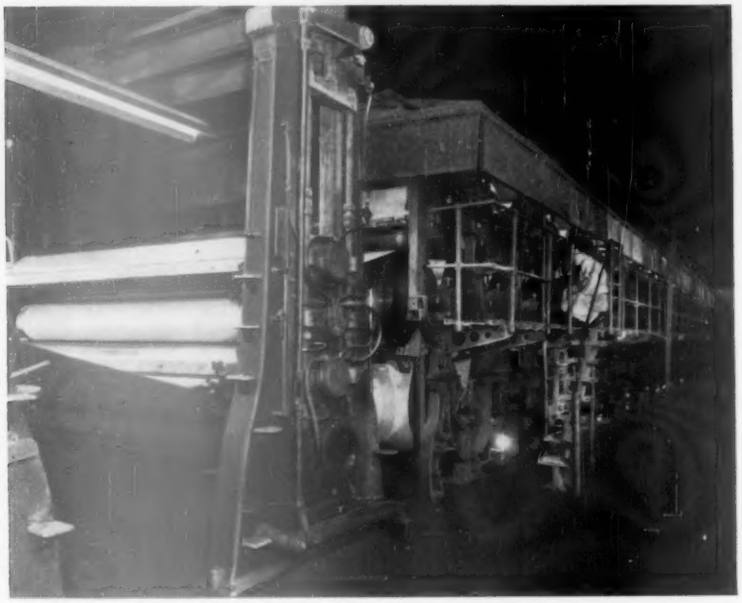
Four Move Up at Fraser's Madawaska Mill

G. L. (SPUD) CROZIER, formerly plant engineer, becomes asst. to the mill mgr. He is a m.e. graduate of Queen's U., joined Fraser at its Edmundston mill in 1947, became mechanical supt. at Newcastle mill and plant engineer later, was named plant engineer at Madawaska in 1956. M. L. (PERK) PERKINS steps up as plant engineer. He is an e.e. grad of U. of New Brunswick, joined Fraser's Madawaska operations in 1952, was named maintenance engineer (1953) and electrical engineer (1955) and asst. plant engineer in 1958. R. S. SHEPHARD the new asst. plant engineer is a b.sc. (civil engineering) graduate of U. of New Brunswick, joined Fraser in 1955 at central engineering in Edmunston, transferred to Madawaska engineering in 1958. W. V. (BUD) EMORY is asst. bond mill supt., is a b.sc. graduate from McGill U., joined Fraser in 1952 and spent four years at Atholville, Newcastle and Edmundston mills before moving to Madawaska in 1956 as asst. to the bond mill supt.

Shephard Emory

HOW HAGAFILM STOPPED RETURN LINE CORROSION, REDUCED DAILY FUEL COSTS

at Whippany Paper Board Company



Quick case history—reading time 58 seconds

THE PLANT: One of the nation's largest producers of paper board and cardboard, Whippany Paper Board Company's Clifton, New Jersey plant uses secondary steam to progressively reduce moisture content in their products during manufacture. Steam is used to heat the more than 20 rolls in each paper machine to effect this drying.

THE PROBLEM: High corrosive action of the condensed steam necessitated replacement of 18-20 pipe nipples *every three weeks*, raised maintenance costs. Corrosion deposits in pipes impeded heat transfer effectiveness, increased fuel costs. Steam traps frequently clogged.

THE SOLUTION: Since introduction of Hagafilm into boiler feed-water system three years ago, no pipe nipples have needed to be replaced due to corrosion. Hagafilm cleaned out corrosion deposits, raising surface temperature of the dryer rolls about 20° F. Steam trap clogging is no longer a problem.

TEST RESULTS: Hall Laboratories engineers, testing the system, had to wait five months before testing strips showed enough corrosion to even be measured. After five months, the strip located at the turbo-generator outlet showed the extremely low corrosion rate of 0.4 mg/dm²/day (0.07 MPY). The strip at the steam trap discharge had a similar low corrosion rate of 1.4 mg/dm²/day (0.26 MPY).

FOR FULL INFORMATION on how Hagafilm can help in your plant operation by putting a thin protective film on metal surfaces throughout the condensate system, contact Hagan Chemicals & Controls, Inc.

HAGAN

CHEMICALS & CONTROLS, INC.

HAGAN BUILDING, PITTSBURGH 30, PA.

HAGAN DIVISIONS: CALGON CO.—HALL LABORATORIES—BRUNER CORP.

George T. Ward to International Paper Co. Executive Staff

Mr. Ward, a vice president of International since 1958, joins the executive staff of the company in New York, announces RICHARD C. DOANE, president. Mr. Ward also has served as chief engineer of Southern Kraft Division with headquarters in Mobile, Ala. He will assist LAMAR M. FEARING, executive vice president of I.P., with all matters pertaining to operation of Southern Kraft Division. After joining I.P. in 1930 as an engineer, Mr. Ward served in various engineering and operating capacities at several Southern mills. In 1944 he was named assistant engineer of the division and became chief in 1945. He supervised the company's major program of modernization and expansion since World War II.

EUGENE J. WHITE now represents the Bolton Co. in the land of Penjerdel. . . . THOMAS J. HENRY, formerly with Mt. Hope Machinery in Ohio, has joined Bolton Emerson as sales engineer in Penjerdel. . . . DICK SILBERMAN, formerly technical director, St. Lawrence Paper Co., has joined Gould Paper Co. as technical director. . . . BILL TWISDALE, formerly asst. technical director of Gould, has rejoined the company.

Richard A. Premo Rejoins Gould Paper Company

He has been technical consultant for Bulkley, Dunton Pulp Co. He rejoins Gould as assistant to RALPH W. LEUTHI, president and general manager. Mr. Premo is a chemical engineer graduate, had been with Gould 8 years until he left to join J&J Rogers Corp. His previous assignments have been technical director, paper mill supt., asst. mill manager and general manager.

Correction

In the November 1959 issue of PULP & PAPER KYLE WARD, research associate at the Institute of Paper Chemistry, was erroneously identified as "Ward Kyle."

NEW BAILEY
Multi-Pointer Gage

...has twice as many indicators
...no taller than a telephone!

Now the popular versatile Bailey Multi-Pointer Gage has been reduced in size to conserve control panel space—without loss of easy *readability*.

Each new Multi-Pointer Gage Unit offers you these three choices to—

1. Measure and indicate draft, pressure, differential pressure and level.
2. Transmit above variables either pneumatically or electrically to remote indicators, recorders and/or controllers.
3. Receive and indicate any measured variables which may be transmitted pneumatically by standard SAMA ranges of 3-15 psig. or 3-27 psig.

FEATURES

Compact Size—Two large, easily-read 7" scales in space only 4 inches wide.

Wide Range Selection—Standard ranges from 0-0.5 in. H_2O to 0-5000 psig available.

Choice of Standard Colors—Satin Black, Slate Gray, Moss Green, or Terra Tan may be selected as an exterior color at no additional cost.

Colored Scales—Scales available in white, red, green, blue, yellow, or orange.

Fluorescent Illumination—All gages have slideout unit containing bulb and starter for ease of maintenance.

Readily Accessible Adjustments—Zero adjustment made from front of gage. Other adjustments made from rear of gage.

Two-point Positive Mounting—Gage unit mounted with two clips . . . no holes to drill or studs to weld.

Unlimited Indications—Any number of basic two-indicator units may be placed side-by-side to provide indications of related factors. Each two-indicator unit is separately mounted.

For additional information, call your local Bailey District Office, or write us direct.

P47-1

Pulp and paper division

BAILEY METER COMPANY

1037 IVANHOE ROAD • CLEVELAND 10, OHIO

In Canada--Bailey Meter Company Limited, Montreal

JOHN D. ZINK, senior vice president, Hammermill Paper Co., has retired. GEORGE W. BAILEY is now supt. of operations at Hammermill's Oswego division. In Erie, DONALD C. SANNER and LEONARD W. KLEIMAN have moved up to general foreman and foreman respectively in the paper mill and ROBERT K. FESSENDEN has been promoted to supervisor in the power division.

MICHAEL A. ROBERTS is now manager of industrial relations for the Northwestern U.S. for St. Regis Paper Co. and will be based in Tacoma, Wash. . . .

HOWARD S. ROTHE is manager of National Gypsum Co's. Newburgh, N.Y. paper mill. The graduate of Syracuse U. also attended Broome Technical Institute in Binghamton, N.Y. and is National's youngest plant manager. . . . ROBERT E. BRINGMAN, formerly i/c pulp sales for Gilman Paper Co., is now sales mgr. of the specialty papers division.

GORDON W. WOOLBERT, sulfite supervisor, New York and Penn's Johnsonburg, Pa. mill, has retired. ARCHIE F. SHUEY succeeds him as sulfite mill supervisor. DICK RETZER steps up as general foreman and SIDNEY SPRAGUE moves up as tour foreman. GEORGE MURRAY is now foreman of Nypen's old paper dept. and KEN RILEY was promoted to machinist supervisor in general repairs at Johnsonburg.

FRED ZIRM JR. is field process engineer for Quaker Chemical Products Corp., handling sales to paper mills.— MAURICE R. CASTAGNE.

Southern

West Virginia Pulp & Paper Co. has promoted JOHN FLOYD to a new position: technical service mgr. for the Wellsburg, W. Va., and St. Louis multiwall bag plants He joined Westvaco in 1954. . . . Fuller Co. has opened a new district office in Houston with JOSEPH R. PERRY in charge. . . . VIC J. SUTTON, vice pres. of operation at Bowaters Southern Paper Corp., Calhoun, Tenn., is now vice pres. and gen. mgr. He steps into the shoes of D. W. TIMMIS, first vice pres. at Calhoun, who becomes managing director of Tasman Pulp & Paper Co. Ltd., New Zealand. Mr. Sutton also succeeds Mr. Timmis as vice pres., Bowaters Carolina Corp., Catawba,

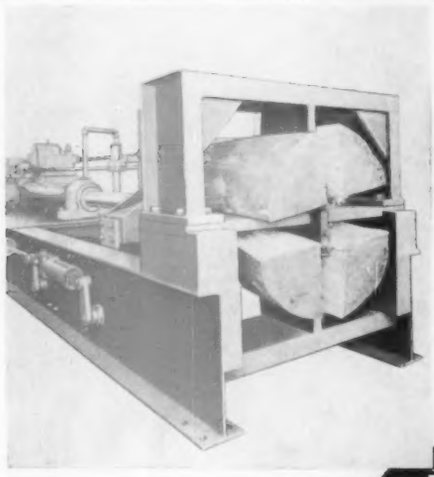
Perkins Foster Ellis

Van Hoose Williams Jones

Six Promoted by IP's So. Kraft Div.

ARTHUR F. PERKINS, mgr. of the Mobile, Ala. mill, becomes asst. to the divisional gen. mgr., engineering and construction. New chief engineer of the International Paper Co. division is ARTHUR P. FOSTER, former asst. chief engineer.

In other divisional promotions: EUGENE E. ELLIS JR., mgr. at Natchez, Miss., becomes Mobile mgr.; JAMES M. VAN HOOSE, asst. mgr. at Camden, Ark., is new Natchez mgr.; VARNADO WILLIAMS and EMMETT R. JONES, production supts. at Mobile and Natchez respectively, become asst. mill managers.



ONE STROKE DOES IT!

MURCO HYDRAULIC WOOD SPLITTER

- **For processing logs too large in diameter to be handled by the chipper.**
- **Capacity approximately 1 log per minute.**

The MURCO Hydraulic Wood Splitter does the job so that handling and number of operations are reduced to a minimum. It is equipped with a Star type stationary axe that quarters the wood in one stroke. Its capacity is approximately 1 log per minute (based on the calculation that it takes about thirty seconds to load the machine with the log to be split). Extremely heavy construction, this is equipment designed for heavy duty . . . base is an all-welded design from structural steel . . . axe knives are steel plate flame hardened and strongly reinforced to withstand the impact of splitting . . . cylinder and ram of heavy duty construction Typical installations — Rayonier, Inc., Doctortown, Georgia; Olin Mathieson Chemical Corp., Monroe, Louisiana; Scott Paper Co., Mobile, Alabama; Owens-Illinois, Tomahawk, Wisconsin; Container Corporation of America, Fernandina Beach, Florida; Kansas City Star Co., Park Falls, Wisconsin.

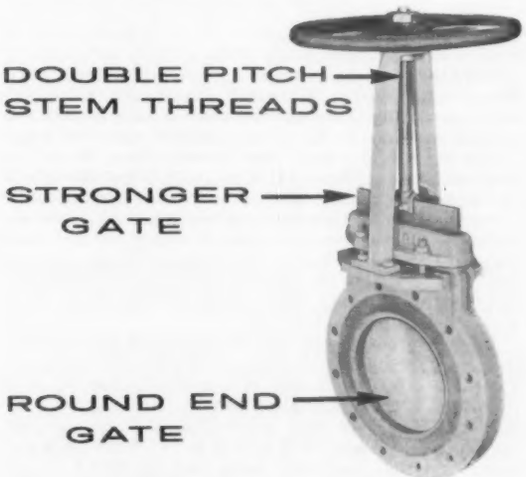
WRITE

for proposal and quotations to meet your pulpmill requirements . . . specify maximum diameter and length of wood to be split.

Overall dimensions of MURCO Hydraulic Wood Splitter for 36" diameter wood 5'3" long are 21' long x 5'2" wide, x 5'8½" high.

D. J. MURRAY MANUFACTURING CO.
Manufacturers Since 1883 WAUSAU, WISCONSIN

Built STRONGER... to last LONGER!



DeZurik
BONNETLESS KNIFE GATE VALVES

You get fast, easy operation with DeZurik Valves. Their *stainless steel* stems with double pitch threads require fewer turns of the handwheel, less wear on operating parts. Their thicker gate (⅝" in the 8" valve) will withstand greater pressure; it WILL NOT buckle and cause leakage and sticking as thinner gates do.

The round end of the DeZurik gate eliminates pockets in the bottom of the valve where stock can pack, preventing shut off. It's a *cleaner* valve . . . requiring less maintenance!

Get more information on DeZurik Gate Valves in Bulletin 300. Write for it.

DeZURIK CORPORATION
SARTELL, MINNESOTA

TC TENNESSEE CORPORATION

LIQUID SULFUR DIOXIDE

For Effective Removal of RESIDUAL CHLORINE

Tennessee's Liquid Sulfur Dioxide is a most efficient and economical anti-chlor. Removes residual chlorine and other materials which cause color reversion or yellowing with age. It also eliminates excessive residual chlorine in water.

Tennessee's Liquid Sulfur Dioxide is of highest purity and is very effective as a reducing, bleaching and neutralizing agent, preservative and pH control.

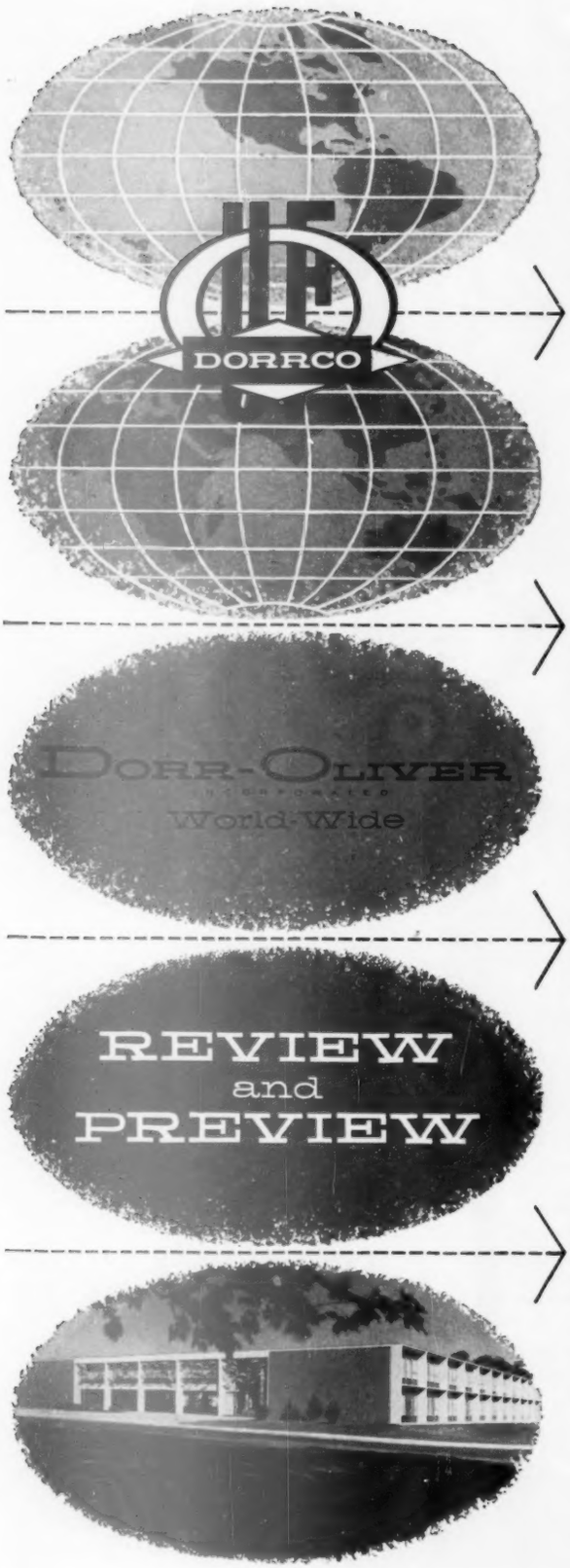
Let us consult with you on the possibilities of Tennessee's Liquid Sulfur Dioxide in your processing.

LIQUID SULFUR DIOXIDE HIGHEST QUALITY SO_2

Available In:
CYLINDERS
TON DRUMS
TANK TRUCKS
TANK CARS

TC TENNESSEE CORPORATION

TENNESSEE CORPORATION
615-629 Grant Building, Atlanta 3, Georgia



1959 has been a paradoxical year. With the public press reporting good business for the country as a whole, it has taken a discerning student to discover that the part of the economy relating to capital goods has only bettered to a modest degree. This fact, plus the low carry-over of orders from 1958, caused us to have an unhappy year financially.

However, with the modest but positive increase in business in the U.S.A. and the substantial increase in orders for most of our overseas areas, we look forward with confidence to 1960. Improvement of efficiencies in all internal departments has also been positive and is continuing both as to costs and the time it takes to do things. This naturally will be beneficial to our customers.

SANITATION—Once again this segment of our operations has played a dominant role in our worldwide business during the past year. Orders were placed with us and our subsidiaries to serve larger centers of population such as Trenton, New Jersey; New York City; Bagdad, Iraq; Chicago, Illinois; and Elizabethville in the Belgian Congo, as well as for smaller municipalities from Pierrefond, Ontario to Albertville, Alabama and from the Villa Carmen housing development in Puerto Rico to Harlingen, Texas. Two large U.S. corporations also will install D-O equipment in treatment plants constructed for a research laboratory in New York State and a West Virginia townsite.

Further proof of widespread acceptance of our newer developments is installation of a SpiroVortex system at Checotah, Oklahoma and of CompleTreator units at industrial plants, recreation centers, housing developments and military sites in the United States. Abroad, our Dutch subsidiary will install one of these units in a concrete rather than steel tank, and the first CompleTreator unit has been purchased in the Philippines. The latter, for a large refinery, represents the first export order for our manufacturing representative in Malaya.

New applications of proven equipment include use of the ODS pump for handling conditioning lime for sewage sludge filtration and fabrication of a plastic sludge filter. Also, development work continues on additional applications of our industrial equipment in the sanitary field.

SUGAR—Orders from new and expanding cane sugar factories in India for RapiDorr Clarifiers and Oliver-Campbell Filters contributed significantly to the business of our subsidiary in that country. And in other locations around the world—Mexico, British Honduras, Egypt, Mozambique and Swaziland, for example—these two units continued to be accepted as standard in the industry. In beet sugar, a British producer purchased First Carbonation Thickeners and Vacuum Filters for two new mills; and two Italian mills will use a total of four Vacuum Filters.

PETROLEUM—A variation of the initial application of the DorrClone Desanding System in fresh water treatment is the desanding of salt water used to recharge wells for secondary oil recovery at a West Coast location. Outside the U.S. our Japanese representative is fabricating filters for use in a catalytic cracking process and our British company will supply oil-water separators for both British and Brazilian refineries. Also of interest is equipment for a pilot plant to recover oil from tar sands.

PROJECT ENGINEERING—This phase of our operations was also particularly active in 1959 as design of phosphoric acid plants to be located in Idaho, Great Britain and Ireland and a phosphoric acid and triple superphosphate installation for Brazil was commenced. Also in the fertilizer field was a contract for process modification of a large British plant.

Late in the year, work was started on design of a large limestone crushing plant for which D-O will also purchase equipment and other materials. Our French subsidiary and domestic company working jointly virtually completed design of a large Yugoslavian copper concentrator. Two smaller but nonetheless significant projects—both including laboratory testing and feasibility studies—involved production of a limestone substitute to be used for self-fluxing sinter in blast furnace operation and the recovery of nickel from waste pickle liquors.

WATER—Conventional pre-treatment equipment will be utilized at D-O supplied water plants for a new steel mill in India, a military camp in Iraq and the municipalities of Wilmington, Delaware; New Castle, Pennsylvania; Saida in Lebanon; and Maracaibo and Naiquata, Venezuela. Next year new PeriFilter systems will go into operation at New Oxford and South Pittsburgh, Pennsylvania and in 1959 a large system with two Hydro-Treator mechanisms went on line treating Midland, Michigan's water supply.

FLUOSOLIDS SYSTEMS—One of the new applications of the FluoSolids System this year has been preheating coarse shale in a special three-compartment reactor to produce light-weight aggregate. A second is drying iron ore before magnetic separation and concentration. Currently, the iron ore industry appears to have other drying applications ideally suited to fluidization. FluoSolids roasters are also under construction for a Canadian smelter where only partial sulfur removal is required.

Projects involving already proven applications have included in 1959 a pyrite roaster for a sulfuric acid plant on Formosa, three systems marketed by our Italian subsidiary for roasting pyrite to produce sulfur dioxide for pulp mill bisulfite cooking liquor and for a large zinc roasting installation in Yugoslavia, a large coal dryer for a Western producer, a copper-cobalt roaster in the Belgian Congo and detergent dryers in the United States.

METALLURGICAL—As in past years our work in this area has involved virtually all of the metallic minerals from gold to iron ore. The latter field has been among the most active with purchase of Sizers and Filters for Canadian washing plants, DorrClone classifiers for desliming prior to flotation and Thickeners, Filters and Pumps for recovery of blast furnace flue dust.

PULP AND PAPER—A new tool for this industry is a novel pressure washing filter. Installation of the first U.S. manufactured unit is being made in a Southeastern pulp mill. Ideally suited to brownstock washing, the unit has a number of advantages from both the operating and installation standpoints.

Recausticizing systems including process flowsheet innovations, such as precoat operation of the Lime Mud Filter and application of a two-compartment White Liquor Clarifier with special feedwell, were purchased for new or expanding mills in Canada, India, the United States, Portugal, Japan, Yugoslavia, Scandinavia and the Philippines.

Around the world the American Saveall continued to be recognized as the major means of recovering paper machine fibers from white water and in the U.S. the largest bleach tower designed to date will soon go into operation. An unusual and interesting application of the Merco Centrifuge is recovery of by-product material used as a drill mud dispersant at a West Coast mill.

CHEMICAL—During the year applications of the Plastic Filter, first introduced in mid-'58, were broadened to include a variety of fine chemical and pharmaceutical separations and washing of acid leach liquors from metallurgical pulps. Also in the realm of new applications is dewatering of various plastics using the Mercone Screening Centrifuge.

As usual, our standard line of equipment played a major role in a great number of Italian chemical plant expansions and in large new or expanded facilities in France, Germany, Spain, Mexico and here at home.

FOOD PRODUCTS—Successful application in 1958 of the Mercone-Precoat Filter combination for apple juice processing has resulted in orders from two West Coast packers for similar stations.

In starch, several domestic and overseas producers will employ D-O centrifugals of virtually every design for current modernization and process modification projects. Our Dutch subsidiary has put into operation three corn and potato starch washing and processing plants in Germany and Finland.

NON-METALLICS—A new clay and sand plant in Idaho will utilize considerable D-O sedimentation, filtration and centrifugal classification equipment and a Pennsylvania limestone producer has purchased Classifiers and a large Thickener for installation in an earthen basin. Also in the clay industry, the longest Oliver drum filters ever fabricated—24 feet in length—will be shipped early next year to a Southern producer.

We have noticed with much concern the apparent growing tendency of many users of services and equipment to buy almost exclusively on price rather than on demonstrated product quality and the essential engineering services made available to them during planning and after installation. This is not a new subject—and one on which there has been much forceful editorial comment in the technical press.

This practice confronts the supplier with the practical short range choice of sacrificing product quality and needed engineering, losing the business, or taking it at a loss. For our own part, we do not propose to fall into this trap which, economic considerations aside, can only result in arresting technological advance and which could have a profound effect on the leadership of the free world in things technical.

J. D. HITCH, JR.
Chairman of the Board

December 1, 1959

RapiDorr, SpiraVortex, CompleTreator, DorrClone, Hydro-Treator, FluoSolids, Merco, Mercone, T.M. Reg. U.S. Pat. Off.

PULP & PAPER

Strictly Personal

S.C. Mr. Sutton joined Bowaters as a technical supt. at Bowater's Newfoundland Pulp & Paper Mills Ltd., in 1944. He was made exec. director of Bowaters Research & Development Co. Ltd. when it was formed in 1949 and participated in the development of the Tennessee mill. . . . CARL A. BERGMAN is new chemical sales mgr. of General Dystuff Co.'s southern region. He will direct sales in the Charlotte and Chattanooga branches.

Hats off to TOM F. (SHORTY) HARGIS JR., electrician for the Ecusta Paper div. of Olin Mathieson Chemical Corp.—he just rounded out 20 years of service and has never missed a day of work! On occasions, when he had to go to the hospital "Shorty" took his vacation so he wouldn't mar a perfect record.

HAROLD SUTPHEN is new asst. mgr. in charge of administration of the Fine Papers div. of West Virginia Pulp and Paper Co. at Luke, Md. He joined the staff in 1956.

RAY CROSS, formerly with the Pandia div. of Black-Clawson Co., is now a project engineer with St. Regis Paper Co., Pensacola, Fla. . . . LAWRENCE P. BAUER JR., a graduate of North Carolina State, is now a research engineer at Ecusta Paper.

Winthrop Endicott Now Heads All Riegel Carolina Sales

Mr. Endicott, who has been manager of board sales, Carolina Division, Riegel Paper Corp., now is sales manager for the entire division. This means his responsibilities will include the sales of market woodpulp made at the Acme, N.C., mill. He has offices in New York and at Acme. He formerly was in sales work for the converting mills of Riegel in New Jersey. He has been with Riegel since 1939, except for time in war service. He attended Grenoble University in France.

. . . MAX KRIMMEL, formerly of Hammermill Paper Co., is now research associate for the Herty Foundation Lab in Savannah, Ga. . . . HOWARD W. MEAKIN has been named head of the Pulp & Paper dept. of J. E. Sirrine Co., Greenville, S.C. . . . Allis-Chalmers Mfg. Co.'s Industries Group names TRAVIS L. LINDSAY sales representative in the Jacksonville, Fla. district. . . . JOHN A. PUTNAM, New Orleans salesman since 1952, has been made Atlanta, Ga. office mgr. for U. S. Industrial Chemicals Co. . . . General Electric Co. will open a Jacksonville, Fla. facility for the repair and rebuilding of all kinds of electrical equipment. Start-up is set for spring.—WILLIAM F. DIEHL, JR.

Adam Trieschmann, Former Exec V.P. of Crossett, Dies

Adam Trieschmann, with The Crossett Company, Crossett, Ark., more than 50 years as executive vice president, manager and director, died at the age of 82 in Evanston, Ill., where he lived the past 33 years. He was responsible for construction of paper and chemical plants which changed Crossett from a sawmilling company to a highly integrated industry.

Born in Germany, he lived in U.S. since the age of 6 and attended Iowa Wesleyan, which later awarded him an honorary degree and he served as its board chairman. He was president and chairman of Ashley Drew & Northern Railroad and president of Arkansas-Vancouver Timber & Lumber Co., Ltd. He maintained offices in Chicago and often served as spokesman or advisor for timber industries.

3 THREE Answers To Your Lifting Problems From American's Automation Line!

For Complete Information Ask for Bulletin AMC-9000

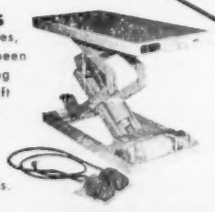
AMERICAN'S Series M-1223 Lifts are designed for heavy industrial applications—to handle heavy sheet material, lumber, structural steel, brick and tile, as well as bulky, heavy or awkward pieces. Lift platforms are furnished with checkered or plain steel plate, gravity rolls, powered rolls, or powered chains. Wheels are an optional feature.

AMERICAN'S Series M-1202 Lifts are truly the "Jack-of-all-Work". Ideally suited for handling intermediate sized loads of sheet materials, bulky items, or heavy awkward parts.

The M-1202 Lifts, as well as the other lift series, can be equipped with wheels for floor or track mounting, recessed into the floor for permanent installation, or set on the floor surface to be moved by lift or fork truck, where necessary.

For Complete Information Ask for Bulletin AMC-6000

AMERICAN'S Pantograph Lift Tables, in the M-1170 Series, have been designed for all industries using pallets or skids. The Pantograph Lift Tables are characterized by their small platform sizes, high travel, capacity range and maneuverability when equipped with wheels. Loads can be positioned at any point on the up or down travel and work is accessible from all sides and levels.



For Complete Information Ask for Bulletin AMC-5000

American MANUFACTURING COMPANY INC.

2119 PACIFIC AVENUE • TACOMA, 2 WASHINGTON, U. S. A.

Why Hunter Packing Company uses STANOIL Industrial Oil

Two reasons: (1) STANOIL is a superior oil. (2) Along with STANOIL, Hunter Packing receives experienced lubrication technical service.

A special antioxidant in STANOIL gives the oil resistance to *chemical* change. Deposits are minimized. The oil has a high viscosity index, is resistant to *temperature* change. It lubricates effectively at both high and low temperatures. Due to special refining techniques, STANOIL will not readily emulsify. A special additive minimizes foaming. STANOIL has a low pour point. It flows freely at low temperatures. A rust inhibitor in STANOIL "plates out" on metal surfaces.

W. P. "Sandy" Wehking, the Standard Oil man who calls on Hunter Packing Company, has plenty of experience in technical service work. He's been at it for 17 years. Sandy studied chemistry at Blackburn College. He has also completed the Standard Oil Sales Engineering School.

To get more information about STANOIL Industrial Oil and to obtain technical help on your lubrication problems, call the Standard Oil office near you in any of the 15 Midwest or Rocky Mountain states. Or write, **Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.**

Quick facts about **STANOIL Industrial Oil**

- Antioxidant gives oil resistance to chemical change, minimizes deposits.
- Inhibitor "plates out" on metal surfaces, prevents corrosion.
- Receives special refining to eliminate emulsion problems. Contains additive to minimize foaming.
- High viscosity index. Resists temperature change.

You expect more from STANDARD *and you get it!*

Temperature check. Frank Persson of Hunter Packing Company and Standard Oil lubrication specialist W. P. "Sandy" Wehking inspect one of four compressors in Hunter plant that uses STANOIL Industrial Oil.

Pacific

FRED B. BROWN, Vancouver, B.C., is elected to the board of Puget Sound Pulp & Timber Co. to succeed the late RALPH M. ROBERG. He is president of Van West Logging Co. and Anglo-American Timber Co., wholly-owned British Columbia lumber-timber subsidiaries. . . . DAVID BOTTEMILLER, a sophomore studying for the ministry at Pacific Lutheran College, has been named end on the Evergreen all-conference football squad. His father, HENRY L. BOTTEMILLER, is Pacific Northwest technical and sales representative for Titanium Pigment Corp. . . . JIM GOLLADAY succeeds HAL SEEDS as asst. personnel and safety supervisor for Crown Zellerbach Corp. at Antioch, Calif.

In promotions at CZ's Gaylord Container Corp. div., WILLIAM T. NYE, patent counsel and asst. director of research, becomes director of patents at Crown Z headquarters, San Francisco; and V. C. EGGERDING, asst. treas. and asst. sec. for Gaylord, moves to San Francisco as asst. treas. and gen. credit mgr. of the parent firm. . . . Promotions at National Container Corp. of California: CARL J. DUNIVIN, vice pres. at Los Angeles, becomes gen. plant mgr. and asst. to the president in charge of southern California operations; WILLIAM J. PRUDLER, vice pres. and gen. mgr. at Oakland, is asst. to the president in charge of northern California operations. . . . FRANK FISH, Jacksonville, Fla., joins St. Regis Paper Co. as purchasing agent for the Tacoma, Wash. mill expansion. In other Tacoma happenings, HARRY ZWEIG, St. Regis safety director, joins the board of the Tacoma-Pierce County Chapter of the American Red Cross. And DARRELL R. SORENSON, 20-year-old son of Tacoma Plant Engineer ARVIN SORENSON, has been awarded the $500 Crown Zellerbach forestry scholarship at the Univ. of Washington.

L. R. MULLINEAUX, steam plant supt. at CZ Antioch plant, retires after 29 yrs. service with the Crown organization. . . . CLIFTON BOUTELLE, formerly asst. vice pres. in charge of production & gen. supt. of Lockland Paperboard Mill Div. of Diamond National at Lockland, Ohio, joins Weyerhaeuser Co., Longview, Wash. as staff assistant to Mill Mgr. E. N. WENNBERG.

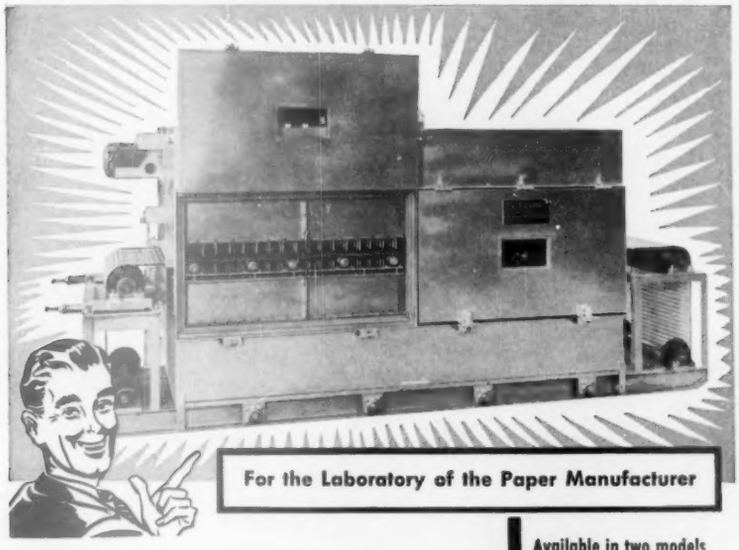
JOHN W. PRIESING has been named mgr. of the new West Coast sales branch of the Solvay Process div., Allied Chemical Corp. Formerly West Coast sales representative, he will headquarter in San Francisco. . . . Allis-Chalmers Mfg. Co. reports two West Coast appointments: W. L. HASLAM, San Francisco mgr. for chemical and metal sales, and ALAN PURCHASE, Los Angeles mgr. for industrial sales. A-C's Industries Group has also announced West Coast changes: J. A. LONGLEY, regional representative for transmission and distribution equipment; T. E. MEYERS, mgr., San Francisco district, and G. K. LEWIS, mgr., Portland district.—LOUIS H. BLACKERBY.

Norton Clapp Elected President of Weyerhaeuser Company

Mr. Clapp of Seattle, a well-known Pacific Northwest business leader and a director since 1946, succeeds F. K. WEYERHAEUSER who becomes chairman of the board, on Feb. 1. They are trading offices. Mr. Weyerhaeuser has been president since December, 1956, having succeeded his late brother J. P. WEYERHAEUSER, JR. A resident of Tacoma, Wash., he began his first products career in 1919 with the Boise-Payette Lumber Co. in Idaho. He joined Weyerhaeuser Sales Co. as a field representative in 1920 and in 1929 he was elected its president. In 1955 he was elected chairman of the parent firm, a post he now resumes.

NEW

JET ZONE® LABORATORY and Pilot Plant HIGH VELOCITY DRYER



For the Laboratory of the Paper Manufacturer

- widens the scope of your pilot operation.
- makes initial runs to test market.
- allows wide range of paper formation and finish.
- opens up new avenues for product development.
- extremely adaptable as a dry and cure unit.
- permits exploration of the new coating techniques.

Write for complete specifications

Available in two models to handle 24" web.
GAS OR STEAM FIRED!

Model L 4
- Two four-foot long drying zones.

Model L 8
- Two eight-foot long drying zones.

JOIN THE INDUSTRY...INVESTIGATE THE NEW TECHNIQUE OF HIGH VELOCITY DRYING

"TAKING THE MYSTERY OUT OF DRYING"
WOLVERINE EQUIPMENT COMPANY
31 MAIN ST., CAMBRIDGE 42, MASS.

A Leader in High Velocity Drying Since 1946

this laminated board was joined with

SCRIPTITE* 54

*SCRIPTITE, LYTRON: Reg. U.S. Pat. Off.

Both hard and slack sized boards are today being laminated with Scriptite 54 adhesive. This water insoluble copolymer works efficiently in conventional laminating systems, producing laminated board that passes 48-hour and longer immersion periods with no delamination. Even when the laminate is forcibly separated, there's a complete fiber pull, no separation at the glue line. With 54, there's no need for heat or long storage curing periods —glue line water resistance sets immediately. For samples and new report, "Laminating Paperboard and Liner Board with Scriptite 54," write: Monsanto Chemical Company, Plastics Division, Room 739, Springfield 2, Mass.

Monsanto

The Monsanto line of paper resins also includes

SCRIPTITE 40 *urea type wet-strength resin.* **SCRIPTITE 33** *melamine wet-strength resin.* **SCRIPTITE 56** *low viscosity resin for improved water resistance, wet and dry rub resistance with easy handling.* **SCRIPTITE 52** *in combination with formaldehyde, gives water resistance to folding boxboard and jute liner.* **SCRIPTITE 50** *unsurpassed printability, improved surface characteristics on boxboard.* **SCRIPTITE 45** *new thermosetting resin for stabilization of paper.* **LYTRON*** *water dispersal resin polymers for coatings.*

Strictly Personal

Foxboro Co. Opens New Offices in West

As part of its plan to provide direct representation in the Pacific Northwest, one of the Foxboro branches, located at 4,000 Aurora, Seattle 3, Wash., will be headed by branch mgr. ERV HUMMELL who formerly represented Dorr-Oliver in this region. The Portland, Ore. office, headed by F. J. RENNER, branch mgr., is temporarily located at 211 Weatherly Bldg. Prior to establishing direct company branches, Foxboro had been represented in these two cities by Bumstead-Woolford Co., a firm long established in the power boiler field.

Fairbanks-Morse Sets Up Pacific Coast Region

Establishment of a Pacific Coast sales region for Fairbanks, Morse & Co. is announced by ALFONS LANDA, chairman. ROGER M. MURRAY, who for 26 years has been manager of the San Francisco branch of Fairbanks-Morse, 630 Third Street, San Francisco, was elevated to vice president in charge.

This marks the first step in sales regionalization for Fairbanks-Morse. The area in the region includes all or part of 11 states, with district sales offices in San Francisco, Los Angeles; Salt Lake City; Portland, Oregon; Seattle and Phoenix, all responsible to Mr. Murray.

Dr. Meissner, Henry Haight Join Stanford Researchers

Stanford Research Institute is expanding its forest-products studies with the addition of two industrial economists to the general marketing research group. New staff members are DR. FRANK MEISSNER and HENRY H. HAIGHT. SRI forest products researchers conduct economic studies on pulp, paper, paperboard, packaging, etc.

Dr. Meissner comes to SRI from Crown Zellerbach Corp., where he headed marketing research for distributor sales. Formerly he was with Giannini Foundation, University of California, and was instructor in statistics and marketing research at Golden Gate College.

Mr. Haight had four years experience in forestry consulting. He is a graduate of the school of forestry, U. of California, and received an m.b.a. from Harvard Graduate School of Business Administration.

E. C. (Ernie) Manders, Manager, New Oregon Pulp-Paper Mill

He leaves soon for North Bend, Ore., to direct work on Menasha Wooden Ware Corp.'s 125 ton NSSC mill, to be completed in mid-1961. For over ten years he has been with Kimberly-Clark, as tech. and prod. supt. and development engineer at Coosa River, Ala., Chihuahua, Mex., Terrace Bay, Ont., and other mills. Previously he was with Crown Zellerbach and KVP Co. He graduated from University of British Columbia in 1941.

Boylon Edwards Wymore

Asst. Vice Pres. F. O. Boylon Becomes CZ Gen. Mgr.-Mfg.

He will report to E. W. ERICKSON, vice pres. for manufacturing and construction. Mr. Boylon was res. mgr. at Camas, Wash.

R. R. EDWARDS moves up from product mgr. for bags and bag paper to asst. vice pres. for manufacturing in charge of mill operations in California, Louisiana, New York and Ohio; H. H. WYMORE, product mgr. for consumer products, is appointed asst. vice pres. for overall product management.

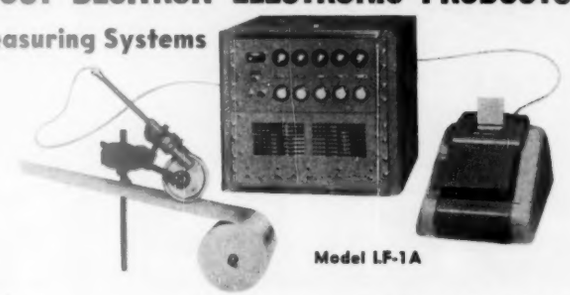
Dahl Nunn

C. Raymond Dahl, Ed Nunn In New Executive Posts

Mr. Dahl, asst. mgr. of Crown Zellerbach's big Camas, Wash. mill becomes resident mgr. Crown-Time's new St. Francisville, La. printing paper mill succeeding Mr. Nunn who joins CZ's Chemical Products Div. at Camas as asst. to Gen. Mgr. W. M. HEARON.

POST DECITRON ELECTRONIC PRODUCTS

Measuring Systems



Model LF-1A

Now! . . . a permanent record of lineal footage. The Post LF-1A Lineal Footage System combines the accuracy of proven electronic equipment with a visual "Clary" readout.

Ideal for accurate measurement for manufacturers of wire, paper, textiles and sheet metals. Sensing elements can be furnished so that measurements can be made in 1/16ths of an inch, 1/8ths, 1/4's or in full inch increments.

Write for literature.

See "Post" at the Automation show. Booth #444, N. Y. Coliseum

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Another Stebbins First–

OPERATIONALLY PROVED

Insulated Ceramic-Concrete Outdoor Tanks for Sub-Freezing Climates

The tank illustrated, located near the Canadian border, has been through two winters carrying stock at 4% consistency. With no addition of heat, there has been no freezing—no adherence to the inner walls.

Perfect for outdoor storage of acids, liquor and pulp slurries in locations where extreme temperature changes are commonplace, Stebbins insulated tanks conserve heat, decrease the hazard of freezing and provide more uniform liquor and stock temperatures for operations. Cost compares with that of insulated steel, wood stave and other materials, AND—the interior surface can be of tile or brick with proper joint material for full corrosion resistance.

Conserve valuable inside space and still prevent expensive maintenance due to stock freeze-ups. Specify a Stebbins insulated tank. Complete on your foundation ready for use, with concrete cover or open for your own cover. Wooden covers can be supplied by a Stebbins subcontractor. Write for full details.

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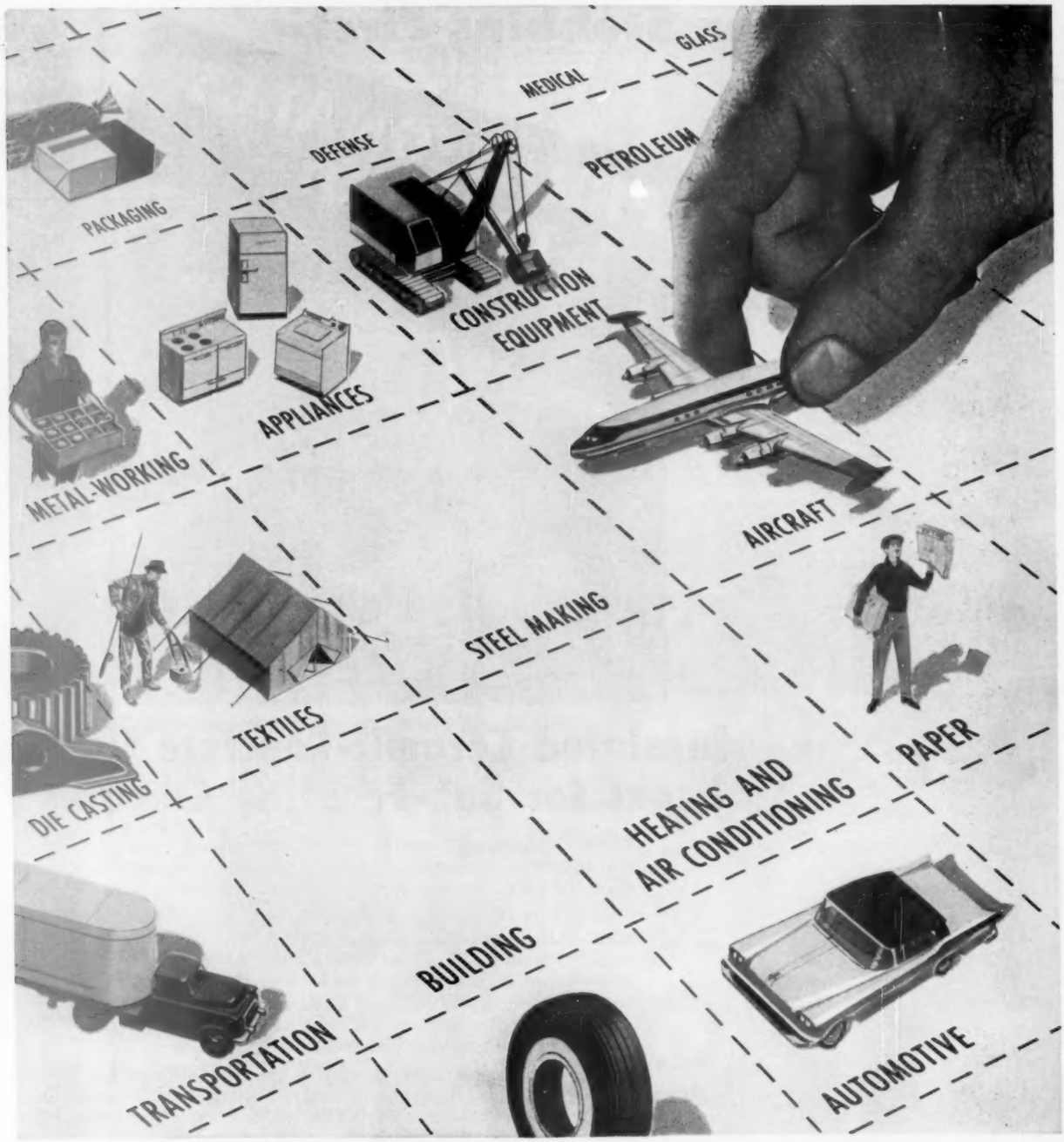
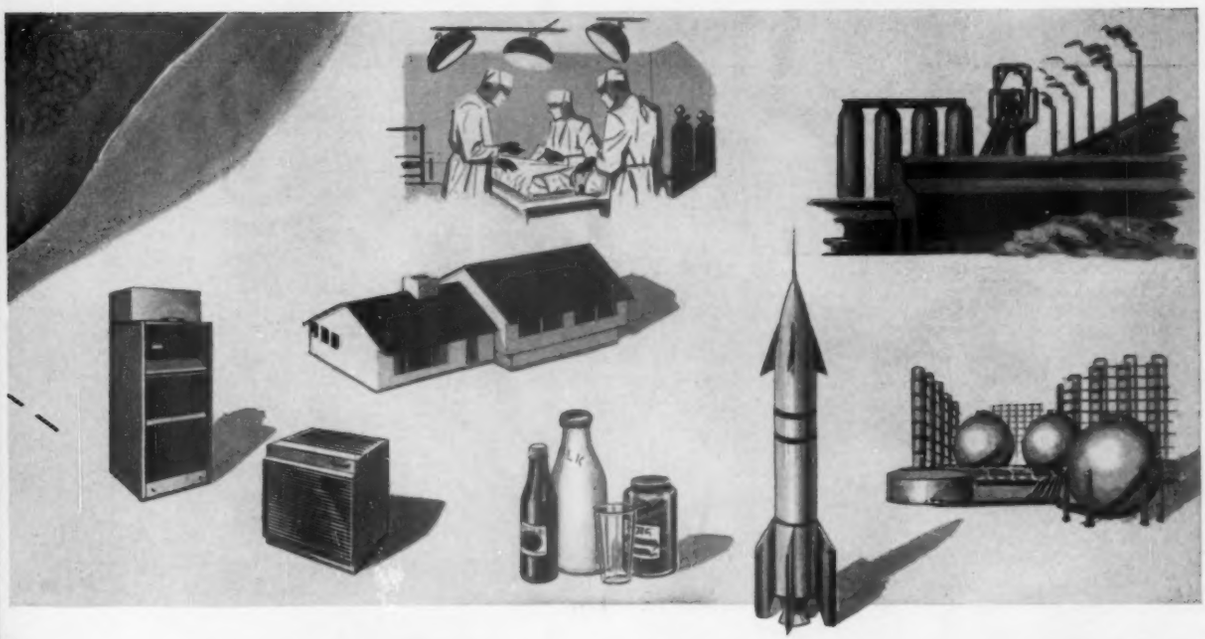
CANADIAN STEBBINS ENGR. & MFG. CO., LTD. — TOWN OF MOUNT ROYAL, MONTREAL 9, CANADA



The checkerboard above shows several holes in the pattern. These are now filled with the acquisition of Surface Combustion, its divisions and subsidiaries.

M-R
MIDLAND-ROSS CORP.



WELCOME!

J. O. Ross Engineering, specialists in designing and creating 'Engineered Atmospheres' for many types of industrial operations, extends a hearty welcome to Surface Combustion with its Janitrol Aircraft and Heating and Air Conditioning Divisions, and its subsidiaries, as the latest members of the soundly conceived, rapidly growing and purposely diversified organization serving many basic industries...Midland-Ross Corporation.

Surface Combustion and Ross have much in common in their respective services to industry traveling along parallel lines. The experiences and talents of each will be of immeasurable value to the other...with the customer benefiting greatly.

Surface Combustion, directly or through its divisions and subsidiaries, gets into the basic metal products and metal fabricating industries, petroleum refinery, glass, mechanical and marine fields...also residential, commercial and industrial buildings with its furnaces, heaters, and air-conditioning systems...into the aircraft and missile field with special heaters.

J. O. Ross will continue in its specialized service to industry...what it has been doing for close to forty years: designing and creating 'Engineered Atmospheres' for vitally important operations such as drying, curing, baking, conditioning, exhausting, humidifying, as well as for providing comfort heating and ventilating in work areas and adjacent factory offices.

• • •

If you would like to receive a more detailed report on this most recent acquisition by Midland-Ross Corporation, write to the Corporation at Executive Offices, 55 Public Square, Cleveland, Ohio for a copy of 'Quick Facts About Midland-Ross, Surface Combustion and Janitrol'.

J. O. ROSS ENGINEERING

Division Midland-Ross Corporation
730 Third Avenue, New York 17, N. Y.

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LOS ANGELES • MT. PROSPECT, ILLINOIS

Canada

C. J. JEFFERY has been named vice pres., Great Lakes Paper Co., Ltd., Fort William, Ont., in charge of manufacturing. He has been mill mgr. . . . LAURENCE B. POPHAM has retired as sec. of Abitibi Power & Paper Co. Ltd., and CRAIG DICK has succeeded him, according to President and Gen. Mgr. D. W. AMBRIDGE. . . . W. T. BENNETT, vice pres., engineering, Canadian International Paper Co., has been nominated for chairman, Technical Section, CPPA. E. L. NEAL, president and gen. mgr. of Gaspesia Sulphite Co. Ltd., and G. E. WILSON, asst. to the exec. vice pres., Howard Smith Paper Mills Ltd., have been nominated for vice pres., one to be elected. JOHN ASHBY, exec. vice pres., Westminster Paper Co. Ltd.; G. C. BROWN, executive in charge of manufacturing, Price Brothers & Co. Ltd., and C. J. JEFFERY, newly appointed vice pres., manufacturing, Great Lakes Paper Co. Ltd., have been nominated as councillors.

NORMAN D. BENNETT, vice pres. and gen. mgr., Monarch Papers, and director and sales mgr., Garden City Paper Mills, has returned to E. B. Eddy Co. as asst. vice pres., sales. . . . A. E. BALLOCH, asst. gen. mgr. at the Corner Brook Nflnd. mill, has been appointed to the board of directors, Bowater's Newfoundland Pulp & Paper Mills Ltd. MILTON G. GREEN, gen. mgr. of Bowater Power, has been appointed to the board of directors of Bowater Power Co., Deer Lake, Nflnd.

D. N. MITRA, formerly of the Pulp & Paper Research Institute of Canada in Montreal, has gone to Prince Rupert, B.C., to join the technical staff of Columbia Cellulose Co. Ltd. . . . H. J. CRITES has been made asst. director of purchasing for Ontario Paper Co. Ltd. at Thorold, Ont. A. MACEY has been promoted to the position of purchasing agent for the company in Montreal.

C. H. ROSIER has been appointed vice pres. and gen. mgr., Abitibi Corp., of which he is a director. He is also a member of the management committee of the parent company, Abitibi Power & Paper Co. Ltd. . . . ROBERT BURNS has retired as res. engineer of the Sault Ste. Marie Ont. mill of Abitibi. Back in 1920 he joined the engineering staff of the old Spanish River Paper at Espanola, Ont., where the KVP Co. Ltd. now operates a greatly expanded and modernized mill producing bleached sulfate.

A. L. FARNSWORTH has retired as mill mgr. of the Sturgeon Falls (Ont.) div., Abitibi Power & Paper Co. Ltd. He is succeeded by E. G. HESLOP, formerly asst. mill mgr. Mr. Farnsworth was at Sturgeon Falls when the mill was converted to the manufacture of corrugating medium in 1947. Hardboard and particle board products were later introduced. . . . NORMAN RILEY, mgr. of the Montreal div., becomes vice pres. of National Starch & Chemical Co. (Canada) Ltd., Toronto. He is succeeded at Montreal by GERALD W. BURGOYNE, formerly divisional sales mgr.—CHARLES L. SHAW.

New Powell River Mills — Men in Key Positions

Powell River Co. planners are busy preparing for the days—not far off—when Western Canada's first fine paper mill and flakeboard plant, an investment of some $8,000,000 will be in operation near New Westminster, B.C.

As previously reported here, DON MACLAURIN, former control supt. and tech. director at Powell River before going to Wisconsin to serve the Institute of Paper Chemistry and Gilbert Paper Co., has returned as consultant in setting up the management of the new paper mill.

Staff at the paper mill has not yet been chosen, but COLIN A. HENRY has been named to manage the flakeboard plant, which will be in production this winter, several months before the fine paper mill. Mr. Henry graduated in forestry at the University of Liverpool, England, in 1939 and after the war army service, he joined Noel Legh & Co., British importers of lumber, plywood, etc. In Western Canada, he joined W. Claire Duffus, Ltd., wholesale distributors of plywood and general building products, became sales manager and later vice president and resigned in 1956 to enter business for himself. In 1958 he joined Homasote Co., Trenton, N.J., as vice pres. and gen. mgr. of its new Canadian division.

A. P. R. Conliffe, Manager Pulp Sales, Howard Smith Mills

AL CONLIFFE brings to his new duties over 21 years' experience in the industry. He was at the company's Cornwall, Ont., division 15 years and worked on paper machines, in finishing room and pulp department. He joined the pulp sales department in 1953, and has recently been acting as assistant to the manager, pulp sales. His responsibility is for pulp sales of all Howard Smith mills and subsidiaries. He succeeded PETER MACDOUGALL, now head of pulp sales in North America for Stora Kopparberg.

John T. Hegeman, Manager of Pulp Production, Celgar Ltd.

Mr. Hegeman was formerly with Brown Co., Berlin N.H., where he served as plant chemist, asst. supt., mill coordinator, technical supt. and production mgr. in the pulp mfg. division. Celgar Ltd.'s new pulp mill is under construction at Castlegar, B.C. He is a graduate of the Worcester Polytechnic Institute, Mass. and has worked in research and development with Congoleum-Nairn as well as Brown.

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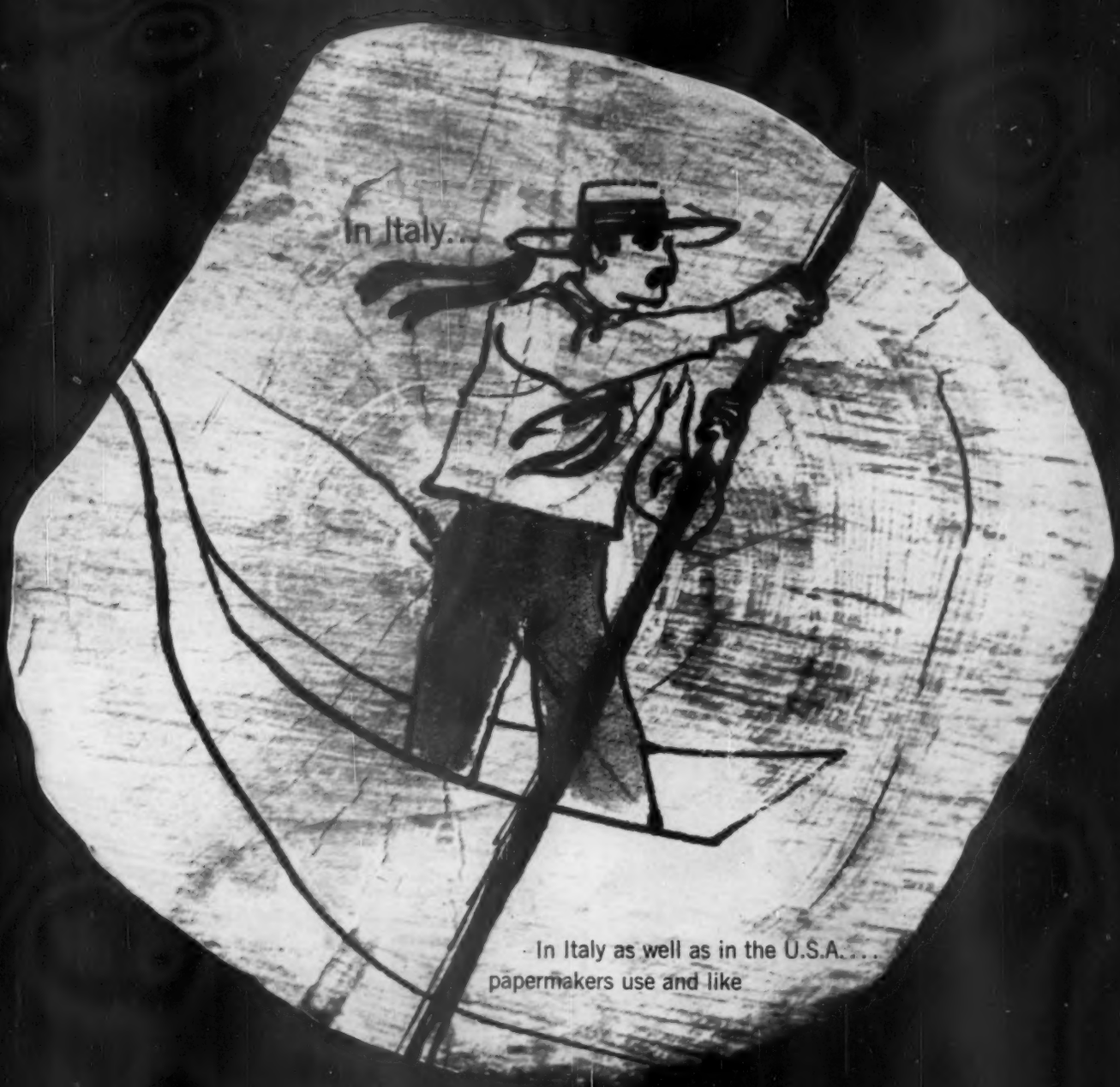
KNOX WOOLEN COMPANY
CAMDEN, MAINE
America's First Manufacturer of Endless Paper Machine Felts



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CHLORINE DIOXIDE BLEACHED SOFTWOOD SULPHATE

CHLORINE DIOXIDE BLEACHED HARDWOOD SULPHATE

Balanced Paper-Grade Pulps Created by Papermakers for Papermakers

Throughout the free world papermakers use and like Riegel's Albacel and Astracel — paper-grade pulps that provide the right balance of all important qualities — brightness/cleanliness, strength, formability and proper coating characteristics.

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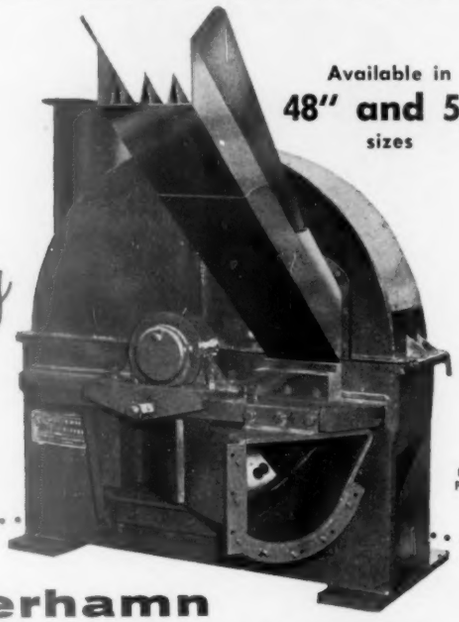
PULP & PAPER

Strictly Personal

Pulpwood

Promotions at Oxford Paper Co.: JOHN L. HARTRANFT JR., asst. mgr., wood dept., becomes mgr. of timberlands and forestry; ARTHUR F. LINCOLN, asst. mgr. to mgr., wood procurement; SUMNER L. BURGESS, tree farmer service forester to supt., New England rail and log haul truck area; ROBERT W. PIDACKS, forester to asst. supt., woodlands; ROLAND E. BOLDUCK, acting supt. to supt., Stetson Land div., and CLAUDE H. MACKAY, supt., Canadian div., to mgr., Canadian operations.

LEONARD A. SAVAGE, cruiser-surveyor in the woods dept. of Brunswick Pulp & Paper Co., Brunswick, Ga., has resigned to become pastor of the Odum (Ga.) Baptist Church. . . . BEN G. RHODES, administrative asst. to Managing Director CHARLES A. GILLETT, is director of public information for American Forest Products Industries Inc.



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The new re-chipper spout is specially designed with deeply grooved bottom which positions waste for feeding correctly to the knife. Re-chipper spouts are available on new equipment, or may be installed economically on existing chippers of any make.

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Hallin Johnston O'Dea

Otis D. Hallin, Vice President Timber, Crown Zellerbach Corp.

Following retirement of D. S. DENMAN, senior vice pres.-timber, who withdrew from active management Dec. 1, after 33 years with CZ, but continues as member of the board and finance committee, Mr. Hallin, who first affiliated with CZ as head of timber dept. at Port Angeles, Wash., mill, now takes over. He was vice pres.-timber, CZ of Canada.

J. P. JOHNSTON, contract logging supervisor at Crown Zellerbach Clackamas Tree Farm, Molalla, Ore., transfers to the Portland office as protection forester for Crown's Wash.-Ore. timber divisions. He will coordinate fire suppression and forest regeneration activities on 12 tree farms.

W. E. O'DEA, formerly construction foreman at CZ's Brightwood, Ore. operations, was promoted to Clackamas contract logging supervisor.

G. CORYDON WAGNER, JR., of Tacoma, Wash., an executive of the St. Paul-Tacoma Lumber Co., division of the St. Regis Paper Co., has been appointed adviser to the director, Forest Products Division, Business and Defense Services Administration, U.S. Department of Commerce. An engineering graduate of Yale in 1949, Mr. Wagner, 34, has been with St. Paul-Tacoma since.

Society of Am. Foresters Elect

CHARLES A. CONNAUGHTON, regional forester of the California region of the U. S. Forest Service, with headquarters at San Francisco, has been elected president of the Society of American Foresters for two-years 1960-1961. He succeeds GEORGE A. GARRATT of Yale University, who was not a candidate for re-election.

HENRY J. MALSBERGER of Atlanta, has been re-elected vice president.

Others elected to the society's governing council for two years: B. E. ALLEN, manager, Woodlands Division, Union Bag-Camp Paper Corp.; WILLIAM C. BRAMBLE, Purdue University; DONALD E. CLARK, regional forester, U.S.F.S., Denver; KENNETH P. DAVIS, University of Michigan; GEORGE A. GARRATT, Yale University; WILLIAM D. HAGENSTEIN, exec. vice pres., Industrial Forestry Association, Portland, Ore.; SVEND O. HEIBERG, professor of silverculture, State University College of Forestry, Syracuse, N. Y.; RICHARD J. PRESTON, JR., North Carolina State College, and CHARLES L. TEBBE, U.S.F.S., Missoula, Mont.

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S. D. Warren Company

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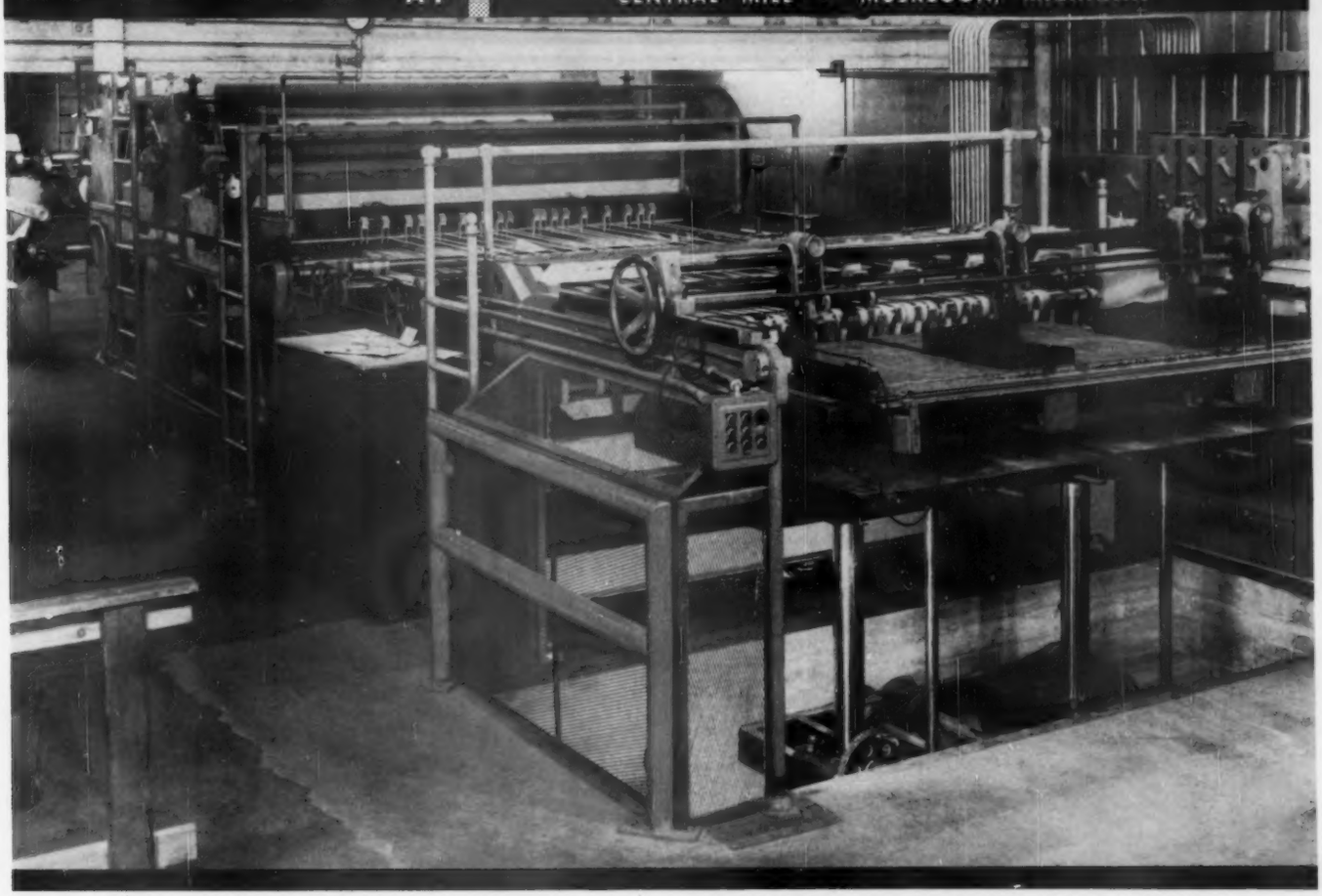

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Practical automation — the magic word in today's vast industrial complex — can be a reality in your finishing room with Clark-Aiken equipment that is custom tailored to meet **your** exact production requirements.

Perceptive management relies more and more on the concept of an integrated system of automation designed to achieve maximum results. And to accomplish this they call on the ingenuity and recognized abilities of Clark-Aiken finishing room engineers.

Schooled in the techniques of modern production methods Clark-Aiken engineers base their recommendations on a detailed analysis of your finishing room functions and physical arrangements of your shop. Thus you are assured of machinery that is designed to solve **your** particular production problem.

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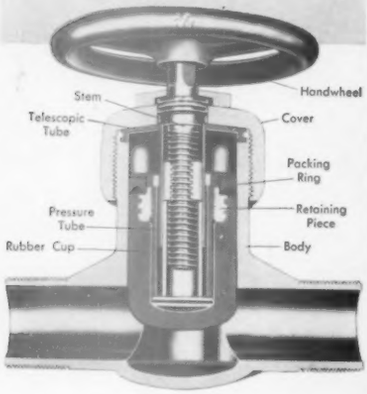
New

ROCKWELL-STÜBBE

PLASTIC VALVE *Solves Corrosion Problems*



1. Simple one-piece body of polyethylene-acrilonitrile butadiene styrene—polyvinyl chloride—polyamide—polycarbonate or other plastics.
2. Valve shuts off TIGHT through pressure applied by telescopic arrangement to natural or synthetic soft rubber cup.
3. Straight-through design—no obstructions in full open position—no pressure loss.
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NEWS OF SUPPLIERS TO THE INDUSTRY

Standish H. Harrison, Mgr., Westinghouse Marketing in West

WALTER J. MAYTHAM, Pacific Coast vice president, said Mr. Harrison's advancement from Pacific Coast regional industrial sales mgr. to region marketing mgr., appparatus division, highlights a series of organizational changes adapting the division's operations to changed market conditions. Objectives are to improve service to customers, strengthen the Westinghouse apparatus offices and emphasize product lines. The result of a two-year study, the program will be extended later to other regions in the nation.

A native of Tacoma, Wash., Mr. Harrison was graduated from Stanford in 1927 with an engineering degree. He joined Westinghouse's graduate student training course the same year. In 1956 he won the Westinghouse Order of Merit, highest honor the company bestows on employes for outstanding achievement. He lives at 552 Ravenscourt Road, Hillsborough.

J. P. Craven O. R. Carpenter

B&W Boiler Div. Execs.

Mr. Craven has been elected a vice president of The Babcock & Wilcox Co. by the board of directors, and placed in charge of the Boiler Division's mfg. dept. according to President M. NIELSEN. Mr. Craven formerly was manager of the division's erection department. He will headquarter at Stirling Avenue offices, Barberton, O. He succeeds PAUL H. SETZLER, who resigned. O. R. CARPENTER was elected asst. vice president, Boiler Division mfg. dept.

L. R. Boling, Becomes Dorr-Oliver President

Formerly exec. vice pres., Mr. Boling succeeds J. D. HITCH JR., new board chairman. Mr. Boling continues as chief executive officer. He joined Dorr-Oliver Inc. in 1941 and also was financial vice president. At one time Mr. Hitch was Japanese representative for the former Dorr organization and served as export mgr.

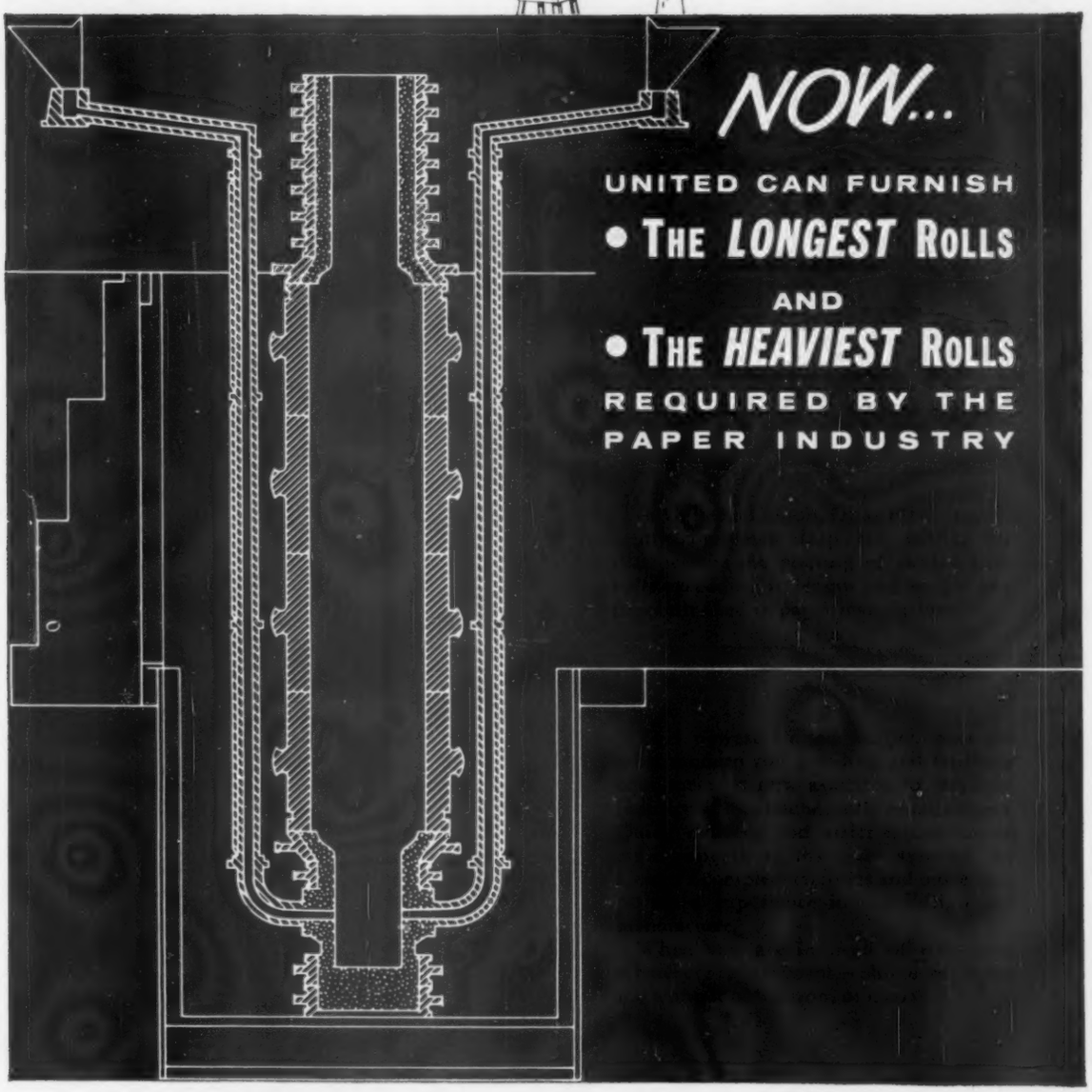
John W. Martin, Project Mgr., CDD, Pittsburgh Coke and Chem. Co.

Mr. Martin's appointment to this post in the Commercial Development Dept. of Pittsburgh Coke and Chemical is announced by HARRY P. PFANN, director of the department. Mr. Martin will analyze and coordinate various chemical projects with respect to their business potential. He was formerly with Koppers Co. and the Virginia Smelting Co. Born in Norfolk, Va., he graduated from VMI and later attended U. of Pittsburgh.

Leonard J. Wood, Product Mgr., National Starch Paper Div.

Mr. Wood has been with National since 1946, starting as a chemist in the Paper Service and Development Dept. In 1953, he was transferred to the New England sales. He was made supervisor of paper technical service in 1955 and in 1957, paper development and service manager. He is a graduate of Abilene Christian College, Abilene, Tex.

UNITED® PAPER MILL ROLLS



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MEYER

Richard H. Meyer Jr. is Assistant to the Sales Manager at Huyck. A Chemical Engineer from Columbia University, Dick is responsible for the publication of the well known Huyck Felt Bulletins and for the organization and curricula of Huyck Felt Workshops. In his handling of advertising and sales promotion he makes good use of his technical training and practical feltmaking experience to keep the paper industry aware of Huyck's many valuable services and new felt developments.

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PAPER CONDITIONING
THE MODERN EFFICIENT ECONOMICAL WAY
BUILT TO OPERATE AT ANY MACHINE SPEED
SYSTEMS ALSO BUILT FOR APPLYING SIZING MATERIALS, STARCHES, WAX EMULSIONS, PLASTICISERS AND OTHER SURFACE FINISHING SOLUTIONS
BUILT FOR MANUFACTURING OR CONVERTING PROCESSES
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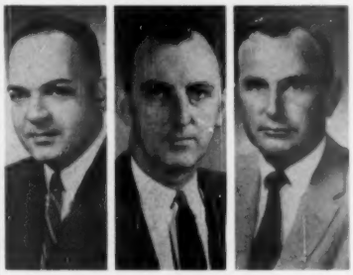
Robert Woolsey Joins Griffith Rubber Mills Headquarters Staff

Formerly of Shell Development Co. technical laboratory at Torrance, Cal., his duties in Portland, Ore., include both research and technical development work for Griffith rubber roll coverings and moldings, extruded coatings and linings.



Willers Coey Cain

Hooker's Executive Promotions

THOMAS E. MOFFITT, president of Hooker Chemical Corp., Niagara Falls, N.Y., announces realigned and expanded executive duties for three corporate vice presidents. THOMAS F. WILLERS will be responsible for Eastern Chemical, Phosphorus and Durez Plastics Divisions, as well as corporate engineering. F. LEONARD BRYANT is assigned responsibility for corporate research, marketing, and general development. JOHN S. COEY succeeds Mr. Willers as general manager of the Eastern Chemical Division. Mr. Moffitt also announces that ROBERT E. NOBLE, former asst. mgr., succeeds Mr. Bryant as general manager, Phosphorus Division, and CHARLES Y. CAIN, former Chicago district chemicals sales manager and later plastic sales, succeeds Mr. Bryant as general manager, Eastern Chemical Division.

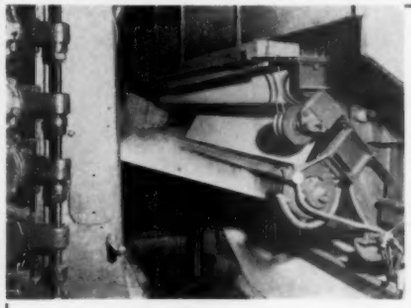
Mitchell Graham

For Link-Belt in Portland, Ore.

WAYNE J. MITCHELL succeeds LESTER T. GRAHAM as Link-Belt Co.'s district manager at Portland, announces JACK STROTT, Seattle, general manager, Pacific Northwest Division. Mr. Graham is retiring after 42 years with Link-Belt and its Pacific Coast predecesor organization. Mr. Mitchell joined Link-Belt at its Minneapolis plant in 1948, as a designer and later, was asst. to chief engineer. He transferred to Seattle plant in 1951 as asst. chief engineer, and he was appointed sales engineer at Portland in 1956. He is a graduate of Iowa State.

Douglas K. Ridley, Contract Sales Mgr., Honeywell Instruments

Mr. Ridley has been appointed by Minneapolis-Honeywell Regulator Co. to a new post as contract sales manager for automatic control equipment produced by its Philadelphia-based Brown Instruments Division and other Industrial Products Group units. He will be responsible for contract operations embracing installation and servicing of industrial instrumentation systems designed and developed by Honeywell. He joined Honeywell's Commercial Division in 1947, served as sales manager in Dallas and Chicago.



Improve Paper Quality
with
DUPASQUIER DRIPLESS STEAM SHOWER PIPE

- WET END—breaks up bubbles, disperses foam
- DRY END—increases sheet moisture, improves finish, lowers bulk and caliper
- SAFELY USED anywhere dripless steam desired

Custom Built for Any Machine
U.S. Pat. No. 2642314,
in Canada No. 509451
Write for Illustrated Folder

J. H. DUPASQUIER 560 E. Clarendon St. Gladstone, Oregon

NOW AVAILABLE

2 new economical direct yellow dyes for paper

FASTUSOL® YELLOW RP
FASTUSOL® YELLOW RG

The dyes used in the coloring of paper add considerably to the cost of the finished sheet. GDC has now developed two new, low-cost, non-dusting direct yellows which offer all the benefits of a premium direct dye at minimum expense.

These new FASTUSOL YELLOWS produce extremely light-fast and bright greenish-yellow shades of the highest degree of even-sidedness. They are ideal for coloring all types of paper—bond, ledger, cover, text, etc.—both sized and unsized.

FASTUSOL YELLOW RP and RG are readily bleached with chlorine for simplified re-use of broke. They can be added dry to the beater without danger of showing color specks. They show no indication of burning-out or migration, hence being eminently suitable for coloring board dried at high temperature.

Try these dyes now in your furnish. The quality of our dyes is backed by the finest skilled technical service and prompt deliveries.

Write or call our nearest sales office for samples and additional information.

From Research to Reality

GENERAL DYESTUFF COMPANY

A SALES DIVISION OF

GENERAL ANILINE & FILM CORPORATION

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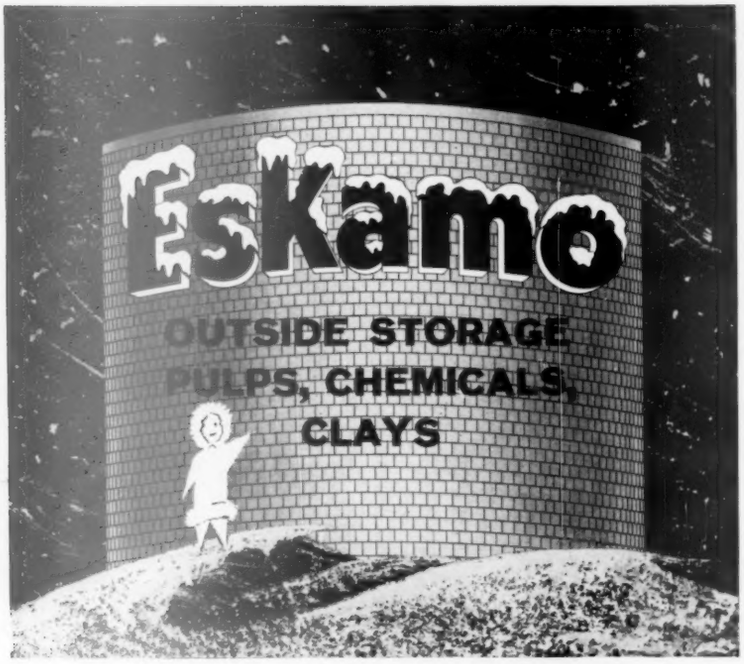
CHARLOTTE • CHATTANOOGA • CHICAGO • LOS ANGELES • NEW YORK • PHILADELPHIA • PORTLAND, ORE.
PROVIDENCE • SAN FRANCISCO • IN CANADA: CHEMICAL DEVELOPMENTS OF CANADA, LTD., MONTREAL.

FASTUSOL YELLOW RP AND RG, MANUFACTURED BY GENERAL ANILINE & FILM, ARE SOLD OUTSIDE THE UNITED STATES AND CANADA UNDER THE TRADENAMES, "PONTALAZ YELLOW RP AND RG," BY DISTRIBUTORS ALL OVER THE WORLD.



put your tanks & chests *Outside*

SAVE BUILDING COSTS. It costs approximately $15,000* to house a 25′ I.D. x 40′ high tank. This cost is eliminated when you use an ESKAMO Tank and *put it outside.*

NO MAINTENANCE. Constructed of reinforced concrete with acid-proof VersaTILE ceramic surfaces inside and out, ESKAMO Tanks are insulated with S & E Insulation to maintain desired operating temperatures. *No outside insulation and weatherproofing to maintain* as with insulated tanks of concrete, steel or wood.

LOW B.T.U. LOSS. At 35°F *below zero* it takes more than twelve hours to lose 1°F. in an ESKAMO Tank.† No freezing—no clinging to inside walls.

CUSTOM DESIGN. Each installation is designed in accordance with applicable ACI, CRSI Codes, and other recognized standards to meet your specific chemical, mechanical and loading requirements. ERECTION is always performed by skilled, direct-employed crews.

EsKamo: Trademark of the Service & Erection Co.

*Area includes working room around and above tank at $.40 c.f.

†A 25′ I.D. x 40′ high tank three-quarters full of stock at 100°F

SERVICE & ERECTION CO.

1673A Washington Road Pittsburgh 28, Pa.

Designers and Builders of Versa TILE Linings and Tanks

James W. McEwan, Asst Sales Mgr. The Elwell-Parker Electric Co.

For the past 13 years, Mr. McEwan has sold Elwell-Parker trucks in the east for one of its distributors, Parkell Engineering Co., New York City. Prior to that, he was associated with the Continental Can Co. in its industrial relations dept. In his new post, he will serve as chief liaison between the company and its more than 30 representatives throughout the U.S. and Canada.

Lynch

McKellar

Black-Clawson Sets Up Air Systems Dept.

Under joint direction of JOHN D. LYNCH and ROBERT R. MCKELLAR, the department will function independently of B-C's domestic pulp and paper machinery divisions, Black-Clawson International in England and Black-Clawson (Canada) Ltd., will work closely with them. Main product will be their high velocity 3-D air dryer.

"Oh - Oh - Five o'clock!"

SPEAKING OF "GROWTH INDUSTRIES"

Notwithstanding the extraordinary expansion of the pulp and paper industry in the past two decades, every present indication points to the necessity for further increased capacity in the near future.

Nowhere are the fundamentals more favorable for this expansion than the Seaboard Southeast, where timber is being grown faster than it is being used.

In the six states of Virginia, North Carolina, South Carolina, Georgia, Alabama and Florida, more than 113,000,000 acres, or 60% of the total land area, are in growing forests. Nowhere in the world does good timber reproduce so rapidly. Numerous streams afford an abundant water supply for pulp and paper operations.

Let us tell you about some of the excellent sites which we have catalogued for the pulp and paper industry.

Address: Warren T. White
Assistant Vice President
Seaboard Air Line Railroad Company
3600 West Broad Street
Richmond, Virginia

A BIG DAY IN CHICAGO SUBURB at new Ross Engineering headquarters and principal hosts were (from the right) Vice President Les G. Janett, who heads the division, and Chet Schmidt, executive vice president, and William Metcalfe, vice president, both from New York City headquarters.

J. O. Ross Engineering–Waldron–Hartig "Housewarming" in Midwest Headquarters

A Midwest office, engineering and research center for J. O. Ross Engineering Division, Midland-Ross Corp., was opened recently with a reception and "house-warming" at which the principal hosts were Les G. Janett, vice president and manager for the Mid-West and Mid-South territory, and Chet Schmidt, executive vice president, and William Metcalfe, vice president, both from New York headquarters.

A handsome and extensive 12,500 sq. ft. one-story building, with a large engineering and drafting area, well lighted and attractively furnished, is located at 320 So. School St., Mount Prospect, Ill., about 22 miles northwest of Chicago and the former offices.

Among other hosts at the event who take an active part in pulp and paper, and are known widely in this industry, were R. H. "Rube" Melin, M. H. Vander Velde, Russ C. McDuffee and Len W. Smith, all of the Mt. Prospect sales engineering staff, and Richard E. Willis, from the Seattle offices of Ross.

Ross manufacturing plants are in New Brunswick, N. J.; Boston, and Los Angeles. Ross Engineering has been a leader in the development, design and fabrication of equipment for controlled atmospheres in processing plants since its founding in 1921.

Also housed in the new building is the midwest sales office of the Waldron-Hartig Division. R. D. Palm is in charge of the machinery section which manufactures web processing equipment used by the paper, foil, and other industries. Ross and Waldron combine talents for many paper coating and drying applications.

The coupling section, headed by Gordon Tigney, provides power transmission couplings for many industrial and commercial users. The Hartig name is carried on plastic extruding equipment used in making film for plastic bags and the plastic squeeze bottles.

Savannah Mill Sets New World Record Even Before New Machine Starts

Union Bag-Camp's Savannah, Ga., plant broke another world's production record for a single paper mill of any kind in November when it turned out 64,355 tons of kraft paper and paperboard on its six paper machines.

Future tonnages of paper and paperboard are going to be even bigger in the near future, according to Dr. Harold Y. Charbonnier, manager of the plant's pulp and paper division.

The company's big new No. 7-236 inch wire Beloit Fourdrinier paper machine was beginning production of lightweight paper in late December, and beginning in January, monthly figures will reflect seven production units instead of the current six. The new machine eventually will reach speeds close to 3,000 fpm. It is one of the most modern and efficient pieces of equipment of its kind in the industry.

The November record figured out to a daily average of 2,145 tons of kraft product, establishing what is believed to be a world's record, Dr. Charbonnier pointed out.

Scapa Dryers Wins Suit

The United States Supreme Court has written the end to the long drawn-out litigation between Abney Mills and Scapa Dryers, Inc., in Scapa's favor. The court denied the petition filed by Abney Mills of Greenville, South Carolina, to review a judgment rendered last June by the United States Court of Appeals for the Fifth Circuit, which dismissed a suit brought by Abney Mills against Scapa Dryers, Inc. of Waycross, Ga.

Abney's claim was that in 1939 its corporate predecessor acquired from Hindle, Son & Co. Ltd. of Blackburn, England, perpetual exclusive rights to the use and operation of Hindle dryer felt looms within the United States and that Abney's rights were violated when Scapa Dryers, affiliated with Hindle, Son & Co., started manufacture of dryer felts woven on Hindle looms at Waycross. The Court of Appeals decided the 1939 agreement was never intended to be perpetual but to run only during the life of certain U. S. patents covering the looms.

E. D. Jones Buys Sveen-Pedersen

E. D. Jones Corp., Pittsfield, Mass., U.S.A., a member of the Beloit group, has acquired the complete North American assets of Sveen-Pedersen Sales Corp., Long Island City, N. Y.

Sveen-Pedersen, founded in 1951, has directed the sales, engineering and manufacture of Sveen-Pedersen Flotation Savealls in the U.S. Effective immediately, Jones will supervise sales and service in the U.S., Canada and Mexico. In Canada Sveen-Pedersen units will continue to be handled by Jones Canadian affiliates, Alexander Fleck Ltd., Ottawa.

The S-P staff, headed by Herman Berg and including Fred Myers and John Casagrande, will move into the new E.D. Jones plant in 1960.

Hercules Becomes More Diversified

AL FORSTER: "Why the name? When we make so many things except powder."

Al Forster, president of Hercules Powder Co., told a press conference in Chicago recently that his company has "substantial expansion plans for the next two years."

A movie was shown the editorial audience, in which many diverse products and plants of this company were shown. The color movie, very up-to-date, is available for showing at association or other industry meetings by writing to Public Relations, Hercules Powder Co., Wilmington, Del.

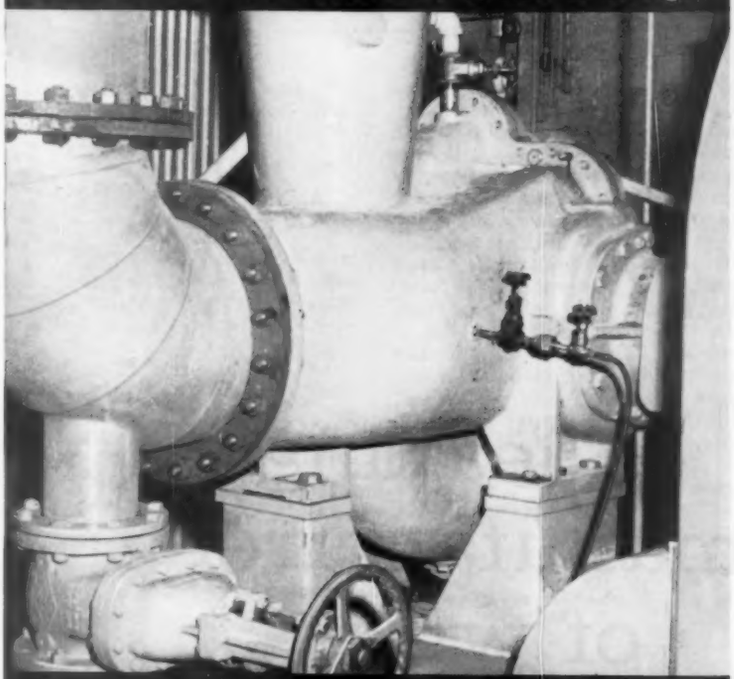
New polypropylene production units in Lake Charles, La.; methanol, formaldehyde and ammonium fertilizer production in California and tall oil in Canada are among the newest Hercules projects, he said. He observed that one of the Hercules guests had questioned why the word "Powder" remains in the company name when it is now so diversified. Hercules Company could suffice, but Mr. Forster, who himself started in explosives sales, left the question open.

He said Hercules now has six departments, including Paper Makers Chemicals, and the movie, showing an accounting of its business, listed protective coatings first, the paper industry second and many others to follow.

The press conference brought out that purified wood cellulose is an important basic ingredient for Hercules nitrocellulose and other basic chemicals.

Moss, hemp, straw, jute, sisal hemp, manila hemp, a green grass grown in Spain and North Africa and cut especially for pulp making, cabbage stalks, pine cones, walnut and tulip leaves, thistle, hops, dandelion roots and even potatoes were tried by papermakers in the 19th century when there was a shortage of rags.

Another WARREN Fan Pump



. . . . . an unusual installation

One of the two WARREN type 18-DB-32 double suction dual volute fan pumps installed at St. Regis Paper Co., Bucksport, Maine . . . an unusual fan pump installation. Notice the side mounting of this bottom suction unit. This specially engineered mounting helped cut piping costs and saved valuable floor space for St. Regis. And because the pump cover can be moved off oversize dowel pins in a horizontal plane, rather than lifted off, the side mounting offers especially good accessibility for a pump of this size. Many such special arrangements are available from Warren.

Here are some of the companies that are using Warren Fan Pumps

DIERKS PAPER CO.
Pine Bluff, Ark.
24-DB-22—16,000 GPM at 30 ft. head

FIBREBOARD PAPER PRODUCTS CORP.
Antioch, Calif.
(6) 20-DB-22—13,000 GPM at 39 ft. head

GULF STATES PAPER CORP.
Demopolis, Ala.
16-DB-20—10,000 GPM at 155 ft. head

HUDSON PULP & PAPER CORP.
Palatka, Fla.
20-DL-22—12,500 GPM at 80 ft. head

ST. REGIS PAPER CO.
Bucksport, Me.
(2) 18-DB-32—12,500 GPM at 200 ft head

WARREN

CENTRIFUGAL · SCREW · RECIPROCATING · GEAR

WARREN PUMPS, INC. WARREN, MASSACHUSETTS

PP-44

a leading manufacturer of wires for newsprint

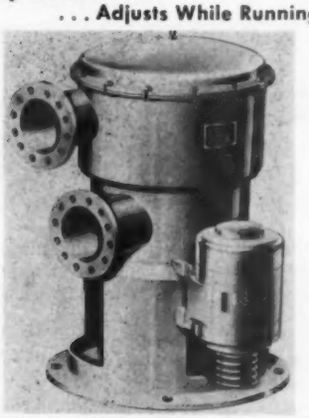
AIR LINES FAIL TO FIX LOWER GLOBAL FARES
How Much, Who
Routes Are Snar
TOKYO, Oct. 12
U. S. Delivers First 14 Sidewinders to Japan
TOKYO, Oct. 12—(Reuters)
—Fourteen air-to-air guided missiles will arrive in Japan this month from the United States, the Japanese defense board announced Monday.
Calls for More Efforts
Jump from Cars

APPLETON WIRES ARE GOOD WIRES

APPLETON WIRE WORKS CORP., PLANTS AT APPLETON, WIS. AND MONTGOMERY, ALA.: INTERNATIONAL WIRE WORKS, MENASHA, WIS. AN AFFILIATED COMPANY

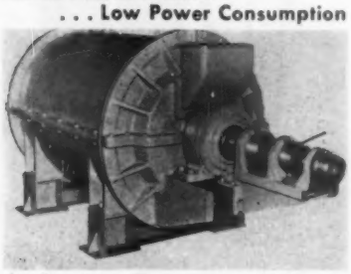
New Equipment Section

Pulp Screen
. . . Adjusts While Running



Applications: To exclude knots of pulp or foreign matter from pulp or paper fibers in suspension.
Advantages: The Vertifoil adjusts to any pulp while running. According to the manufacturer, screen change is unnecessary. Special foils clear screen plates with minimum power and without forcing dirt particles or shive through screen perforations with accepted stock. Maintenance and lubrication are simplified.
Specifications: The Vertifoil is said to be easily installed. Inlet revolves 360° in relation to outlet. All parts in contact with stock are of stainless steel. Drive shaft is isolated from stock by labyrinthes and clear water seals.
Supplier: **Koehring-Waterous Ltd. (subsidiary of Koehring Co.), P. O. Box 607, Brantford, Ont., Canada.**

Stone-Filled Refiner
. . . Low Power Consumption



Applications: For use on screen rejects, impregnated chips and high-density pulp.
Advantages: Refining is said to be accomplished with a minimum reduction of fiber length; power consumption is low, and the adjustable three-stage operating clearance of the rotor remains constant and unaffected by rate of speed.
Supplier: **Appleton Machine Co., 618 South Oneida St., Appleton, Wis., Tel: RE 3-7361.**

Positive Displacement Pump
. . . Is Finding Wide Useage

Applications: For direct injection of feedwater chemicals into critical boiler pressures necessitating high pressure, accurate metering and a high degree of reliability.
Specifications: Model CPS-4 Pulsafeeder has a ¾-in. piston and is capable of pumping 9.4 gph and 3.200 psig.
Supplier: **Lapp Insulator Co. Inc., (Process Equipment div.), 108 Hall St., LeRoy, N. Y.**

Heavy-Duty Belt
. . . for 45° Idlers

Applications: For using 45° troughing idlers in carrying all materials with the Ray-Man conveyor belt.
Advantages: Belt is designed for prevention of ply separation and belt failure at the so-called hinge line. Carrying capacity is increased at 45° regardless of the material being conveyed. Some 12% greater capacity results in handling wood chips, bark, bagasse, etc. Initial cost is said to be lower because narrower belts and conveyor equipment will haul the same loads as belts on 20° idlers. Space requirements and maintenance costs are reduced, as is replacement cost.
Supplier: **Raybestos-Manhattan Inc. (Manhattan Rubber div.), Passaic, N.J., U.S.A., Tel: GRegory 3-2000.**

Ball Valve
. . . "Industry Pace-Setter"

Applications: For handling light slurries and throttling for close regulation of flow.
Advantages: Said to combine long service life with ease of operation and maintenance, the valve is equipped with a DuPont Delrin handle that insulates against both high and low-temperatures. Handle is available in various colors for service identification. Full-port opening permits straight-through flow with no restrictions, minimum turbulence and pressure drops and contains no pockets for entrapment of solids.
Specifications: Valves can be "on flow" in either direction, and installation is said to be easy in tight or hard-to-get-at spots. Units have been tested out to 1,000 psi in ¼- and ¾-in. sizes and to 600 psi in 1- through 2-in. sizes in stainless steel. Temperature range is −300°F to +400°F. Available now in stainless and carbon steel, valves will soon be available in plastic and brass. The units are said to "throttle like a globe valve, handle slurry like a plug valve and have the positive on-off operation of a gate valve."
Supplier: **Cooper Alloy Corp., Bloy & Ramsey Aves., Hillside, N. J., Tel: MUrdock 8-4120.**

Mobile Spar Tree
. . . Replaces the Donkey

Applications: To replace the donkey and fixed spar tree in yarding operations under all types of logging conditions.
Advantages: The unit, according to the manufacturer, steps up production through time-saving features (speed and flexibility of operation). The spar can be lowered, moved and set up in a new yarding location in less than 2 hrs. (exclusive of traveling time).
Specifications: Three sizes available: spar heights of 60, 90 and 100 ft. for mainline sizes of from ⅝ through 1¼ in. Each of six single guylines has individually-controlled hydraulic motor and winch. Spar tree is complete with exception of yarder and conveyance on

Waste heat

turns into $40,000 saving

thru *Carpenter* Stainless Tubing

Reclaiming valuable heat from spent black liquor vapors is a real money-saving operation with this 2600 sq. ft. 3-pass surface condenser. In the process of condensing distillation products out of a heat vapor line from a multiple-effect evaporator, the unit extracts over 19 million Btu's per hour from these vaporous products and entrained non-condensable sulphides. With this recovered heat, clean filtered water used for washing bleached pulp and other plant operations is pre-heated 25 to 30°F. Steam demand on the mill's boilers for water heating is thereby greatly reduced and fuel consumption cut. The net result of this heat recovery operation is a saving of approximately $40,000 yearly.

Contributing importantly to the success and economy of this recovery unit is Carpenter Type 304 Stainless Heat Exchanger Quality Tubing. High operating efficiency is sustained, downtime and maintenance are minimized, loss of capacity due to scale formation is avoided and long tube life is assured. Close uniform tolerance of the tubing saves installation time and costs. As a result, the use of this stainless tubing has become standard practice in these surface type condensers for black liquor evaporator service.

Now you can get cost-saving Carpenter Stainless Heat Exchanger Quality Tubing from our large mill stocks. Types 304 and 316 are available in all popular sizes and gauges. Contact our nearest office for prompt, helpful service on your next order. Send for our up-to-date Selecting and Buying Guide, Bulletin T.D. 120. The Carpenter Steel Company, Alloy Tube Division, Union, N.J.

your master key to cost savings in pulp mills

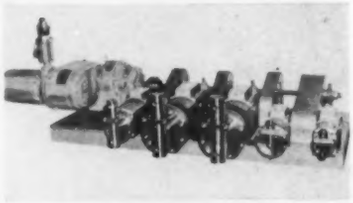
Carpenter

Stainless Tubing & Pipe

which unit is mounted.
Supplier: **Skookum Co. Inc., 8524 N. Crawford St., Portland 3, Ore., Tel: AVenue 6-3627.**

Proportioning Pumps

. . . of Positive Displacement Type



Applications: Originally designed for pulp and paper mills to proportion concentrated H_2SO_4, methyl alcohol, sodium chlorate and water for a chlorine dioxide bleaching process, this latest innovation in the Pulsafeeder line equipped with a multi-head assembly is said to be especially valuable in accurate multi-liquid blending for semi-batch and complete automatic processing.
Advantages: The Model CPQ-3-3-2-1-1's head assembly is adjusted manually in order to establish feed ratio. Overall output is changed from a remote panel board by changing an air signal to variable-speed drive. A diaphragm isolates the chemical being pumped within the reagent head plate and check valves. Because of this, no other parts need be made of chemically stable material.
Supplier: **Lapp Insulator Co. Inc. (Process Equipment div.), 107 Hall St., LeRoy, N. Y.**

Chlorine-in-Air Detector

. . . Remote Samplings Possible

Applications: For the measurement of chlorine-in-air in concentrations ranging from ⅛ to 20 parts per 1,000,000. (A maximum allowable concentration of 1 part per 1,000,000 has been established by government industrial hygienists.)
Advantages: This field detector kit is housed in a carrying case complete with 12 detector tubes and permits

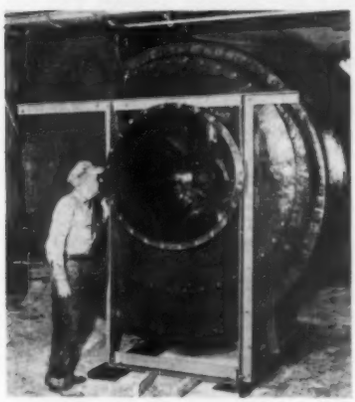
sampling from remote locations (10-, 25- and 50-ft. lines).

Specifications: The instrument employs an aspirator bulb for drawing samples across a "break-tip" detector tube containing an impregnated silica gel. The amount of chlorine in the atmosphere is indicated by the proportional length of blue stain created by reaction of the chlorine with the silica gel.

Supplier: **Mine Safety Appliances Co., 230 North Braddock Ave., Pittsburgh 8, Pa.**

Centrifugal Fan

. . . Fiberglass Resists Corrosion



Applications: For industrial blower installations.

Advantages: The duVerre resin-bonded fiberglass is said to insure complete corrosion protection both inside and outside the unit. Vibrationless operation results from the dynamically-balanced wheel construction, and material does not tend to collect on internal surfaces. The unit is claimed to be virtually maintenance-free.

Specifications: The fan shown above is capable of delivering 32,000 cfm at 2-in. static pressure. The wheel requires 25 hp and rotates at 786 rpm.

Supplier: **duVerre Inc., P. O. Box 37, Arcade, N. Y. (ask for Bulletin Nos. 100 and 105).**

Self-Cleaning Shower

. . . Said To Be "Trouble-Free"

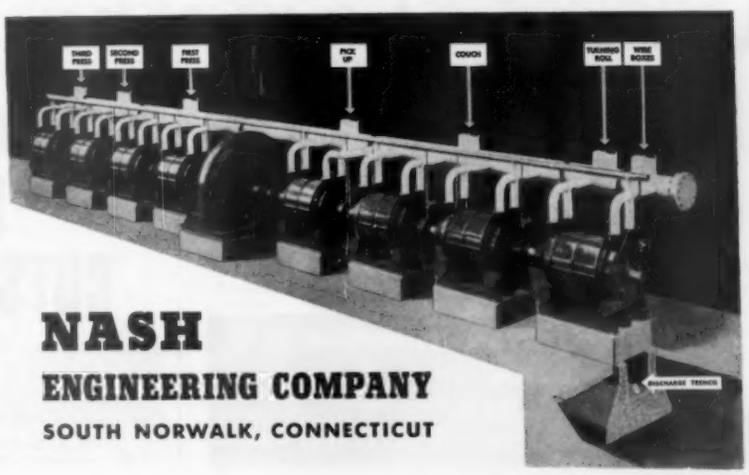
Applications: For installations where lack of space eliminates conventional showers.

Advantages: The unit is said to be self-cleaning and can be used with either clarified white water or fresh water. Water conservation is claimed as a result of the newly-designed nozzle. Lodding nozzles are mounted on a tangent instead of at the bottom of the pipe, where any foreign mate-

This New Nash Vacuum Pump Offers Four Separate Suctions and Vacuums Simultaneously

The Nash 5308-A has four separate suction inlets, each of which functions independently of the others. This offers the machine operator great flexibility, since these may be used in any desired combination to produce a variety of capacities and vacuums.

Picture below shows simple drive possible and flexibility of piping permitting capacities to exactly fit requirements of different sections of the paper machine.



NASH
ENGINEERING COMPANY
SOUTH NORWALK, CONNECTICUT

NEW EQUIPMENT

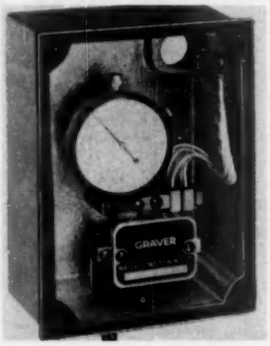
rial is likely to collect. Also, the nozzle assembly extends well inside the pipe itself, making it difficult for scale, metal, chips or other foreign matter to enter the nozzle opening. Installations are said to be common where the distance from the center of the pipe to the sprayed surface is no more than 4-4½ in.

Specifications: The showers allow a great variety of spray patterns from needle to 80° fan. Special screw-in nozzle mountings provide ease and speed of replacement when higher or lower pressure units are desired or a change in pattern is required. A minimum of 50 psi is recommended for clarified white water and a minimum of 30 psi for fresh water. The showers are available in brass or stainless steel.

Supplier: **Lodding Engineering Corp., Auburn, Mass., Tel: PLeasant 6-5173.**

Overload, Indicator, Controller

. . . for Water Clarification Units



Applications: To register sludge overload and indicate necessary shutdown.

Advantages: The Protecta-Trol, an overload indicator and controller for water clarification units, is being offered as regular equipment on Reactivator high-rate solids-contact clarifiers and softeners and on Roto-Rake clarifiers, horizontal flow gravity separators. The unit is housed in a water-tight assembly and works off the input worm of the speed reducer. The moving shaft actuates a sensing plunger that causes movement of a pointer on the dial. The plunger is said to produce an actual torque reading.

Specifications: The device is a companion to Graver's hydraulic lifter introduced a year ago.

Supplier: **Graver Water Conditioning Co. (a division of Union Tank Car Co.), 216 W. 14th St., New York 11, N. Y., Tel: WAtkins 4-2321.**

NEW LITERATURE

"Recommended Piping Practice" Wall Chart

A handy wall chart, "Recommended Piping Practice", suitable for posting on bulletin boards, may be obtained by writing Lunkenheimer Co., Cincinnati 14, Ohio. The three-color, 17 x 22-inch chart is useful for installation and maintenance personnel and individuals requisitioning valves of all types.

Wood Tank Engineering

"Wood Tank Engineering" is the title of a new handbook available from this maker of wood equipment for the paper and pulp mill industries. Applications include blow pits, acid tanks, sulfite liquor tanks, storage tanks, vomit stacks, stock chests, head boxes, agitator and mixing tanks, wood pipe and troughs, water storage and gravity tanks and decay-resisting wood dowels. Also available is the brochure, "Hardware for Wood Tanks." Contact Arrow Tank Co. Inc., 16 Barnett St., Buffalo 15, N. Y.

High-Velocity Dryer

The S/P High-Velocity Dryer is described in a recently-issued bulletin. Included are data and drawings on this "latest dryer development," as well as an explanation of how the unit can increase production and dry webs more uniformly. Contact J. O. Ross Engineering (a div. of Midland-Ross Corp.), 730 Third Ave., New York 17, N. Y.; Carrier-Ross Engineering Co. Ltd., London, England.

Film Available on Oysters

The Northwest Pulp and Paper Association has produced a 26-minute color motion picture on oyster survival which is available for showing. Write to Northwest Pulp and Paper Assn., 202 Tacoma Bldg., Tacoma 2, Wash.

PULP MILL MACHINERY
BY Clark-Aiken
PULP CUTTING, FINISHING,
Warehousing and Shipping Equipment
Complete Engineering Service
The CLARK-AIKEN COMPANY, Lee, Mass.

Find out how RADER CUTS CONVEYOR COSTS
Write to: Rader Pneumatics, Inc.
1739 N. E. 42nd Ave., Portland 13, Oregon
RADER PNEUMATICS Inc.

Speaking of Pulpwood

Did you know there is an Owen Grapple especially designed for the pulp and paper manufacturing field? The independent tine action . . . an exclusive Owen patent . . . affords greater grabs and larger log loads.

Write today and get convincing facts and special illustrated pulpwood bulletin . . . free upon request.

The OWEN BUCKET Co.
BREAKWATER AVENUE, CLEVELAND 2, OHIO

Southern Corporation, Charleston, S.C.

HORTON CLUTCHES

For complete accurate control

for constant slip, tension control— main drives for inching and slow acceleration applications

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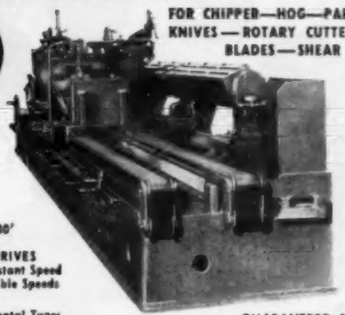

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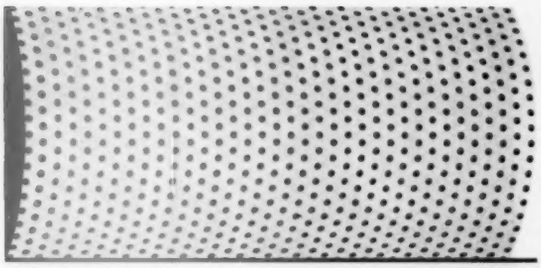

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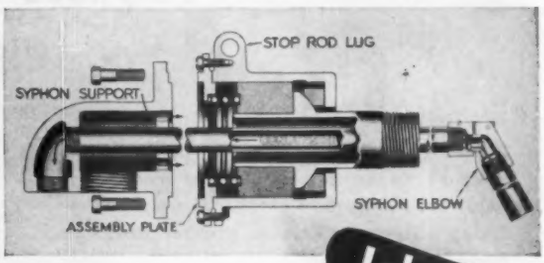

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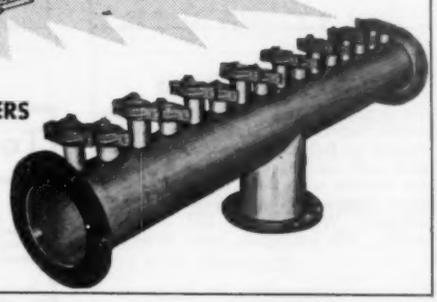

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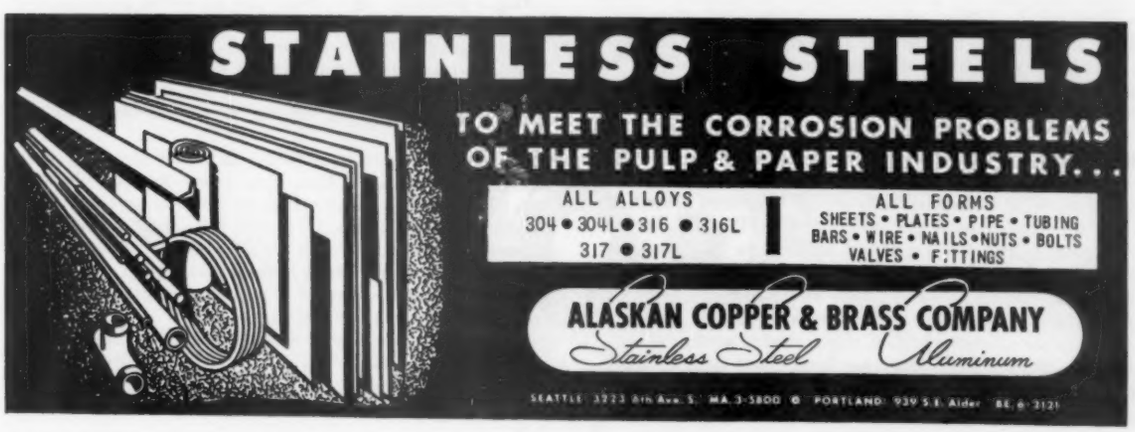
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The Last Word — PULP & PAPER — Editors' Page

Secretaries of Defense, Mr. McElroy And Now, Mr. Gates, Know Their Pulp and Paper

It may be of some significance to the pulp and paper industry that two Secretaries of Defense—Neil H. McElroy, who has retired from the post after 26 months service, and his successor, Thomas S. Gates Jr., have more than a casual interest in this industry.

Mr. McElroy is returning to Procter & Gamble as its chairman. He was formerly its president. As the parent firm of Buckeye Cellulose Corp. and of Charmin Paper Products, P & G is very much involved on woodpulp, linters pulp and paper manufacturing.

Mr. Gates has long been one of the directors of Scott Paper Co., although serving without compensation since becoming a Pentagon executive in 1953. He is a Philadelphia investment banker. Another Scott director, Willing Pepper, also a vice president, formerly was a navy department executive as was Mr. Gates before he became deputy defense secretary last June.

There was a time, in the memory of a great many in this industry, when the pulp and paper industry lacked such powerful friends in Washington, and that was a sad day for this country. It was early in World War II, and pulp and paper was not recognized as an industry highly essential to national defense. Three big pulp mills on the West Coast were shut down because the government would not allot them logs.

PULP & PAPER warned editorially of the dangerous mistake that was being made, but the warnings were not heeded until much critical production was lost. When Hitler's submarines shut off pulp shipments from abroad, the importance of the domestic industry began to be recognized.

It is doubtful if such a thing could happen again. For it is recognized now that war cannot be waged without paper and pulp—printing papers, packaging papers, map papers, cellulose to fire guns, etc. Happily, men like Mr. McElroy and Mr. Gates are very much aware of these facts.

Size, Growth, Stability

On the basis of size, growth and stability, the pulp and paper industry is great.

Not long ago we published letters from some of our readers which indicate that paper can be ranked as anything from 5th to 9th among industries in the U.S., depending on your basis of comparison. But actually, it is now generally accepted that paper and allied products ranks 5th largest of the non-durable goods industries.

As for growth, National Industrial Conference Board figures show that the average annual rate of growth for the U.S. paper industry during the 50 years from 1899 to 1949 was 3.4%—a rate exceeded only by the long-term growth of aluminum and natural gas production. APPA and Bureau of Census figures for the period 1947-49 to 1958 indicate a compound annual growth rate of 3.9%. Growth in U.S. per capita consumption of paper and paper products for the last 40 years has been on the order of 7.5 lbs. annually.

One other characteristic of this industry worthy of emphasis is its stability. Paper has long since shed its label of a "feast or famine" industry. During five of the six recessions since the depression of the 30's, paper production declined less than industrial production, as measured by the FRB index, and during the sixth (1948-1949) the percentage decline was equal.

Size, growth and stability are three important considerations in evaluating an industry. The pulp and paper industry excels in all of them.

The Cranberry Crisis: Could Foodboard Be Hit, Too?

In view of the cranberry crisis that upset food processers from Wisconsin to Washington—two big pulp and paper states, too—the foodboard container industry should be relieved to know that Food & Drug Administration is happy about the National Paperboard Assn. research programs and their progress at Syracuse University and Hazelton Laboratories. Foodboard manufacturers' representatives are to report on progress at a meeting with the Food & Drug officials on Feb. 2.

This seems to assure mills they won't be hit by any sudden cranberry-type ruling without warning, and that mills will have plenty of advance knowledge if any changes should have to be made in use of additives and the present process for making paperboard.

Outdoor Writer Praises Mills

Arthur H. Carhart, known as "the dean of outdoor writers," paid high tribute to this industry's forest management program and public relations policy at a meeting in Seattle.

He said, "Private forest lands produce and provide other resource values in addition to wood and water. The large timber companies have been alert to the hunting, fishing, recreational and related values and in working with sportsmen and public agencies in utilizing these types of natural wealth."

Paper Keeps His Doctor Away

We would like to be able to advise the research and development staffs of paper companies that they can slow down their feverish activities to find new uses and markets for paper because of Yoshihiko Hayashi.

Mr. Hayashi, who lives in Fukuoka, Japan, has been eating a pound of paper every day for about 50 years. He says it "keeps the doctor away."

If we thought that millions of other people seeking health and happiness would take a hint from Mr. Hayashi, we probably wouldn't be writing this—but, instead, phoning our broker to buy up all the paper company stock we could afford.

Just think if everyone in Japan did what Mr. Hayashi is doing. There's 46,000 tons right there—in one collective gulp. Russians would be eating up 104,000 tons daily and Americans, 87,000 tons. Of course this might all be waste paper—then the board mills would have to look elsewhere for fiber. But would health-seekers be satisfied with waste paper or second-use paper? They might insist on it being coated, like vitamins. Even sugar-coated.

Mr. Hayashi, a 58-year-old ragpicker, has been eating paper since he was a child. Despite the opportunities, he says he doesn't wolf any on the job. He says "if I do—it upsets my stomach."

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